

Reaching Out... Dental Hygiene Efforts in Bolivia

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Deep in the heart of the Bolivian jungle lies a tiny community known to its native inhabitants as the Comunidad Tres de Mayo. The several small thatched huts perched on the brink of the flood-swollen cappuccino-coloured waters of the Rio Secure, serve as the homes of nearly eighty indigenous people. Pigs and chickens meander about while women crush corn with giant wooden pestles and men weave banana leaves together for the roof of a new dwelling. The children occupy themselves with their own version of soccer, an unripe melon they've picked from a nearby tree doubling for a ball. This peaceful community rests in quiet isolation from the bustle of the nearest town, Trinidad, a two-day canoe trip down-river. This day, however, a thread of excitement weaves through the town as word is passed along that special visitors are soon to arrive...

Such was the scene that greeted us as we arrived on the bank of the tiny village of Tres de Mayo. It was hard to believe that we were actually there! The adventure had begun six days earlier when we met up with the other members of our dental team in the town of Trinidad.

A Bit About Trinidad

The city of Trinidad boasts a population of about 60,000 and is nestled in the Amazon basin of the northeastern region of Bolivia, South America's second-poorest country. The Bolivian population is predominately indigenous with a smaller group of European descent. The indigenous population consists of the Yurocare and Trinitario, whose languages are similarly named. However, the official language in Bolivia is Spanish. The climate of Trinidad follows a typical sub-tropical trend with a rainy season from October to April and a dry season from May to September. During the time of our visit, the average temperature in Trinidad hovered around 35° C with daily rainfalls in the afternoons. This hot and humid environment resulted in a great deal of sweating and several painful sunburns which were quite an adjustment from the hearty Manitoba winter we had left behind!



Teaming Up

The voyage from Manitoba to Bolivia was not without its adventures. We traveled in two separate groups, leaving a day apart and both facing different challenges along the way. Our group of three dental hygiene students had the added bonus of a missed connection between Miami and La Paz (Bolivia's capital), which led to a forced lay-over in Miami, many more flight complications and a grand finale of arriving in Trinidad minus our carefully-packed luggage! We were grateful to the other members of the dental team, who had arrived before us, for lending us a few articles of clothing. Our luggage finally found its way to our hotel in Trinidad three days later after a great many phone calls and much worry about the accessories we might have had to go without.

Once assembled, our group comprised a total of ten dental personnel: three dental hygiene students, two dental students, two dental residents, two dentists and a dental hygienist, all hailing from the University of Manitoba's Faculty of Dentistry and School of Dental Hygiene. After a myriad of traveling fiascoes, we successfully found each other in the city of Trinidad and set about preparing for the jungle adventure we had all been anticipating for so many months.

How It All Began

Travel plans had originally begun to unfold in November 1999, when we first explored the idea of accompanying Dr. Ron Boyar and Dr. Gerry Uswak on one of their bi-annual expeditions to Bolivia. As the trip would involve missing a significant amount of academic course work, we had to obtain the approval of our professors for our "practicum" in the initial stages of planning. We were thrilled to discover that our proposition had been received with great enthusiasm by all instructors, and we were even able to incorporate projects from two separate courses into the objectives of our mission. Preparations for the trip included immunization for Hepatitis A, Yellow Fever and Typhoid Fever, purchasing backpacking essentials such as rain gear, water purifying systems, insect repellent, etc., travel

planning and meetings with the rest of the group. The cost of the trip varied between travelers as each one of us made a variety of different excursions en route home from Bolivia. On average, the total cost of the trip was nearly \$3,000 (Cdn) for each individual which included various recreational activities and tourist excursions along the way.

Upon our team's "rendez-vous" in Trinidad, preparations for the jungle excursion began at EPARU, a boarding school run by Catholic nuns on the outskirts of the city. Dental supplies had been safely stored here between the bi-annual visits made by Dr. Boyar and Dr. Uswak, supplies that consisted of not only gloves, masks, dental materials and local anesthetic, but generators, portable dental units, dental chairs and instruments, acquired mostly through generous donations in previous years. The dental team was split into two separate groups that would depart for two distinct regions, so it was imperative that all the supplies were organized and divided up evenly. Weight was crucial for one team as they were required to travel by small plane to reach their destination of San Lorenzo. Careful estimations had to be made of weight of supplies being sent with them to ensure that the plane would be able to take off safely. Despite all the meticulous organization, the San Lorenzo team would later discover that they had received the lesser half of the anesthetic and would have to request more supplies to be flown in. It was all part of, what was, for most of us, a first-time experience with the challenges of international humanitarian dentistry.

Another obstacle we encountered was of a more political nature. In past trips, Dr. Boyar and Dr. Uswak had established an agreement with the Governor of Beni (the territory around the city of Trinidad) regarding the provision of fuel for both the plane and boat transportation by the Bolivian government in exchange for free dental services for the citizens. Complications arose, however, when the Governor was out of town during the time when the fuel was needed to be acquired and his second in command was reluctant to sign for the dispersment. After a couple of days' negotiations, the Governor finally returned and the fuel was obtained. Our departure had been postponed by a day, but we soon discovered that flexibility is imperative in these adventures as plans tend to change by the hour!

Our Sight-Seeing Expeditions

Having some extra time in Trinidad before heading up-river, we set out to see as much of the area as possible. We quickly discovered that renting scooters was an exciting and economical way of doing so. We zoomed up and down the cobblestone streets, often narrowly avoiding mishaps with the semi-comatose cows that seemed to rule the roads. These rather scrawny beasts chose to wander aimlessly along the shoulder of the streets without a hint of concern about the motorcycles and trucks whizzing past. At random intervals, they would decide to cross to the opposite side, leaving vehicular havoc in their wake. At one point in our touring, we were all drawn to the sidewalk, where a three-toed sloth was making its way out of the sewage-filled gutter toward nearby buildings. A heroic effort was made by one of the

dental students lifting the sloth off the sidewalk and into the safety of a nearby tree. During our city tours, we came upon the Beni Fish Museum, the local university and a busy market place, all of which we eagerly captured on many rolls of film!

Destination: Jungle

Final preparations purchasing bottled water, food and miscellaneous travel items complete, the five of us set out in the back of a pickup truck to make the trek to the awaiting riverboat. The other team of five had left earlier that day by plane and were well involved in their work in San Lorenzo by the time we started out. The voyage to the boat took several hours and led us over many types of terrain — from rutted jungle roads to a ferry ride across a lagoon aboard a wooden raft. When we finally arrived at the river's edge, we had thought the adventure was over, we were greatly mistaken! It had only just begun...

In the first few minutes aboard the hewn-out canoe which would take us up-river to where the houseboat was waiting, we survived a near-sinking. There was an audible sigh of relief as we boarded a vessel of more significant size and security! We would spend the next two days traveling up three rivers, the Rio Mamore, the Rio Isiboro and the Rio Secure before we would reach our destination of the Comunidad Tres de Mayo. The houseboat, which would be our residence for the duration of our time on the river and while providing dental care, was constructed mainly of wood, and bore a strong resemblance to an old steamboat. Five small rooms, each with a narrow bunk bed and small dresser, provided our sleeping accommodation while the infirmary doubled as an additional room. There was a tiny kitchen, where our meals were prepared by the cook, and a large eating area adjoining it. Washroom facilities consisted of an empty room at the stern of the boat, which housed a showerhead and two clothes hooks. The water for the shower was pumped directly from the (rather murky) river directly into the showerhead. We often had to rid the shower room of a few large arachnids (yes, spiders) before occupying it ourselves! The toilet had its own little room and was kept quite busy, being shared among the thirteen of us.



During our stay on the boat, we were well cared for by the friendly crew that included four pilots, a nurse, a cook and two nuns, Geralda and Maritzia. Our meals consisted of a light breakfast, most often buns, coffee, fish soup and deep-fried pastry, a hearty lunch of soup, a meat dish, salad, fried yucca, rice and lukewarm punch (refrigeration was very difficult). Usually, we had a light dinner of buns, cheese and farmer's sausage. The cheese and sausage were both special varieties, which did not require refrigeration, so were easy to store for the time of our journey, and the fish, known as Paku, was caught fresh from the river.

During the two-day voyage, we spent hours enjoying the comfort of the two hammocks suspended on the back deck of the boat. Freshwater dolphins accompanied our boat on the river, and there was an array of wildlife along the shore: the occasional crocodile, parrots, herons, monkeys and a great variety of insects (the latter kept at a relative distance with the use of 95% DEET repellent.) A great amount of energy was spent avoiding insects, which plagued us morning and night. The most common were mosquitoes; joined by small "no-see-um" flies, which left a tiny blood scab bite. There was also some concern about a local sand fly, which carries a parasite responsible for causing a disease known as Leishmaniasis (white leprosy). Should the parasite be contracted, the infection would spread through the lymph system causing severe systemic implications and leaving a looney-sized hole where you had been bitten. Great efforts were made to remain indoors around the hours of 6am and 6pm when the bugs were said to be the most active. Despite the ongoing battle with insects, the journey up-river proved to be relaxing and enjoyable.

The greeting we received as we pulled up to the bank of the village of Tres de Mayo made us feel like royalty. The people had been warned of our arrival via a primitive radio network, which serves as a communication link between the many tiny communities in the indigenous territory. They were very excited to be receiving dental attention for the first time ever in that area. After a great deal of anticipation, we too were eager to begin setting up our portable dental clinic.

Assembling the Clinic

Thanks to the strong backs and keen help from the boat pilots and villagers, the supply boxes were lugged ashore and we were able to begin unpacking. We set up our clinic on the front porch of a building that the nuns had previously helped build for the people. It housed a small general store and a couple of empty meeting rooms. Three dental chairs were erected: one for restorative work and two for extractions. A small waiting room was also established at

one end of the porch. While in this reception area, patients were given numbers by the nuns to establish their order in the examination schedule. In order to maintain statistical records of the dentistry provided and the general dental condition of the population, a basic chart was established for each patient treated. The charts consisted of the patient's name, home community, estimated age, missing teeth, planned treatment and completed treatment. As the patients had no record of their date of birth, approximate dates were calculated by asking patients about when they were married, or how old they were when their first child was born, for example. No medical histories were available, though the population seemed in good health given their living conditions. Although 162 dental charts were created, only 154 patients reported for examination, 139 of whom required treatment. DMFT (decayed, missing and filled teeth) statistics were recorded for 58 of these patients, who on average had 4.28 missing teeth and 248 missing teeth in total. No previously filled teeth were recorded, as the community had not received any dental attention prior to this visit.

Prior to commencing our treatment, we agreed that it would be most effective to work in two teams — each including a dentist and a dental hygienist — the dental hygienist's job was to provide both the local anesthetic and assistance with the extractions. The third dentist, who was not paired up, was responsible for the operative treatment chair. This proved to be a successful arrangement, with the two dental students taking turns providing operative and extraction treatments.

The Dental Experience

We had anticipated that the bulk of our work would involve performing extractions, but we were not prepared for the magnitude of the task. A total of 413 extractions were performed over a span of four days. As well, 70 restorations including amalgam fillings, composite resin fillings and the occasional preventive resin sealant were completed. The majority of the fillings were limited to only one or two surfaces as larger restorations were not expected to be successful over the long-term because the high environmental humidity and poor moisture control in the oral

cavity would affect the successful application of the filling material over multiple surfaces. A generator was used to power the high and low-speed hand pieces, however, suction and an air/water syringe were not available. This caused some challenges in maintaining a dry field while placing the fillings. Lighting also proved to be a problem during treatment as the portable lights had limited intensity and were difficult to focus. A hand-held flashlight, and in one case a head-lamp worn by one of the dental hygiene students, proved to be more effective.



Infection control was maintained to the best of our ability given the working environment. Instruments were sterilized using a sodium hypochlorite solution followed by rinsing and manual drying with towels. Although these standards may not meet the expectations of dental practices in the developed world, they were best possible techniques that could be employed with the materials we had at hand.

Another formidable challenge, for those of us who were not fluent in Spanish, was overcoming the communication barrier that existed between ourselves and our patients. We had only learned a few basic Spanish terms prior to departing on our trip and so we found ourselves relying heavily on the help of Dr. Uswak, one of our fellow dental hygiene students and Sister Geralda, all of whom were bilingual. By the end of our time in Tres de Mayo, we had picked up a few common dental phrases which proved very helpful during our treatments: "abre mas grande, por favor" ("open wider, please"), "muerde mas fuerte" ("bite down hard"), and "donde duele?" ("where does it hurt?") for example. If we were to make this trip again, many of us agreed that we would make a greater effort to familiarize ourselves with the language prior to departure in order to facilitate communication and interaction with our Bolivian patients.

The administration of local anesthetic was a welcomed procedure among the patients. It was reported that when suffering from dental pain, people would often extract their own teeth without the use of analgesics or anesthetics. The patients were very brave about receiving multiple injections in order to complete all of the necessary treatments. Topical anesthetics were not used as we already knew that topical gels created highly viscous saliva in these group of people which would have complicated dental procedures. The majority of the injections given were inferior alveolar nerve blocks, infiltrations and palatal blocks. Mental blocks proved to be difficult to "landmark" because so many patients had missing mandibular teeth as well as secondary to advanced caries, therefore, these injections were rarely used. Time constraints required that patients were generally seen only once for extractions and, therefore, all necessary treatment had to be completed in one session. To facilitate this single treatment, the entire mouth was often frozen. Initially, the children were slightly upset by the feeling of their tongues due to the freezing, as this was something they had never experienced before. With gentle reassurance though, they were usually calmed and became much more compliant with treatment. If the patients required further restorative work, because restorative procedures were much more time-consuming and had to be completed in the designated operative chair, they were instructed to return the following day. Over the course of four days, patients traveled for several days from as many as seven different villages to obtain treatment, and we continued to provide treatment until everyone was seen.

Join the Humanitarian Effort!

The clinical experience at Tres de Mayo was highly rewarding from many aspects, however, there was a distinct feeling among us that no amount of help would ever be enough considering the enormous need that would continue to persist long after our departure. Recognizing this, we to become more actively involved in humanitarian efforts in the future. Whether in the under-served areas of our own country or abroad, there will continue to be an enormous demand for dental hygienists to reach out in every capacity. We would encourage everyone to embark on humanitarian endeavour, be it for the first time or the fifteenth time. We can assure you that the ensuing feeling of accomplishment is a worthwhile reward!



A Word of Thanks

We would like to extend our appreciation to both Dr. Ron Boyar and Dr. Gerry Uswak for sharing this Bolivian experience with us, and for their patience as we learned by trial and error about the joys and tribulations of undertaking such an excursion. We would do it again in a moment!

We would also like to recognize the incredible team of volunteers with whom we had the pleasure of sharing this trip: fellow dental hygiene students,

Emma Martinez, Trish Warden (RDH), Chris Clarke (DMD), Jay Biber (DMD), Noriko Boorberg (dental student) and Shamick Kotecha (dental student). Everyone contributed their own invaluable element to our dental team and to the success of the trip. Thank you to all!

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