

Oral Health and Nutrition in Children of Haiti

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ABSTRACT

One's well-being cannot exclude physical health, particularly oral health. Good oral health in adulthood typically stems from childhood, hence the importance of children's oral health in any country. However, in developing countries, with many burdens of development, oral health for children is often overlooked. Haiti, for example, is one such country where the number of orphans is overwhelmingly large, and what is available for their oral health care is haphazard at best. Haitian children, especially in orphanages, lack proper nutrition and readily available dental care. Diets high in refined carbohydrates, low in protein, little to no vitamins, minerals, fluoridated potable water, and limited access to quality dental care all contribute to the problem at hand, as well as the difficulty in distributing any foreign aid properly and prudently. This paper will review and discuss current data, including the population of orphans in Cite Soleil, the local availability of resources and personnel for delivery of proper dental care to the said population, what foreign aid can be sustainably brought into the locality and distributed properly, to improve the oral health for these children. A well-established local model from Cite Soleil may be used to scale up to the national level and beyond, perhaps to other developing nations.

Introduction

It has been well established that prevention is a key to long-term good health, and dentistry is no exception. Dental sealants are widely recommended in the United States since they prevent about 90% of posterior caries one year after placement and about 50% five years after placement (Junger ML et al., 2019). Just as important, fluoridation of drinking water has been shown to reduce caries rate by about 25% in children and adults (Community Water Fluoridation | Division of Oral Health – CDC).

In the US, drinking water fluoridation started in 1951 and became widely available by 1960, stemming from research as early as 1901 (Frederick McKay, G.V. Black et al., 1909). Dental sealants were introduced in the 1960s and have been steadily growing in usage for children. Thanks to this research and implementation on a national scale, the percentage of the edentulous population among the elderly (over the age of 60) has significantly decreased in recent years (figure 1). Also, the number of teeth remaining in US adults have been steadily increased (figure 2).

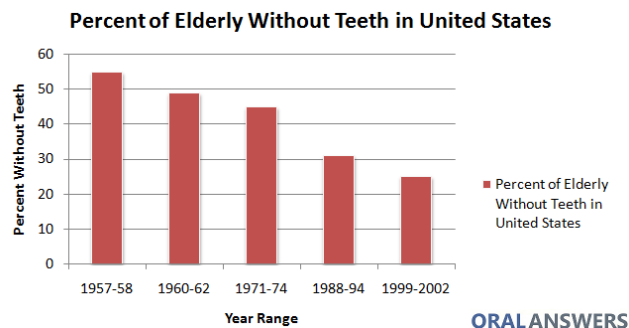


Figure 1. https://www.oralanswers.com/wp-content/uploads/2010/09/Percent_of_Elderly_Missing_Teeth.png

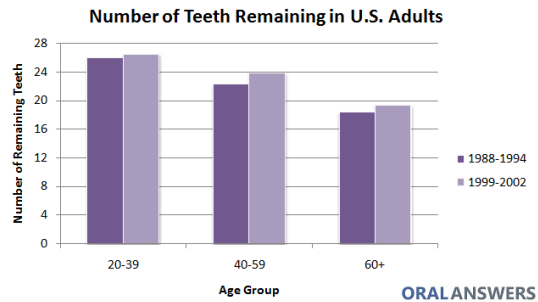


Figure 2. https://www.oralanswers.com/wp-content/uploads/2010/09/teeth_remaining_in_us_adults.png

Discussion

While a nationwide deployment of such services would require significant planning and resources over a long time, a plan for a small district, such as Cite Soleil, should be more easily attainable and executable.

Cite Soleil, near the capital of Port-au-Prince, Haiti, has a densely quartered population of about 300,000. (Jerome). About 60% of the population is under 25, and the number of orphans in institutions or on the streets is estimated to be around 2000. In the absence of proper government provisions, many orphanages are supported and operated by local agencies and in relations with NGO organizations.

One of the missionaries in the Cite Soleil, Deacon Simon Kim (Love and Hope Missionary), has been supporting ten orphanages in the Cite Soleil area for the last 15 years through his mission center located there. The mission center has three stories with guest quarters for foreign mission teams, a church for local residents' worship service and humanitarian help, and medical and dental offices to provide for local patients. Each orphanage takes care of thirty orphans on average. I observed on a few occasions that a dentist with an assistant was able to provide dental cleaning, sealants, and topical fluoride treatment on thirty orphans over a two-day field medical session. It happened to be a part of a medical mission team network, flown throughout the year from the US over a weekend.

The sustainability and scalability of dental services is the key to the plan's long-term success. To service the orphanages in this example would require substantial resources. For every orphanage, a dental mission team would need to commit a minimum of three weekends per year or six workdays of local hire, provided that there is a physical plant to provide dental services.

Supporting ten orphanages inside the Cite Soleil would require thirty-weekend mission trips from foreign dental teams or sixty workdays of local hire. The estimated number of orphanages in Cite Soleil is around thirty, so it would be a minimum of ninety weekends or 180 workdays of local employment just for preventive services.

During our discussion on location, it was discovered that a full-time local dentist could be employed for less than US\$1,000.00 (BDEex.com) a month. Economically, hiring a full-time dentist in-house would make more sense if funds can be raised consistently. The local workforce can furnish assistants and support staff for around US\$200.00 (BDEex.com) per month.

The US-based support teams can raise the money needed to support a full-time local dentist more easily than organizing an away team, which is substantially more costly. There is roughly one medical team coming in from the US to provide for these orphans a month. The cost of deploying such away teams is high, and the dependence on the professionals' availability makes it difficult to plan. Haiti's current political climate and safety concerns also play a role in such endeavors.

Calculations project that one full-time local hire of a dentist at a facility would be sufficient to provide year-round preventive care for all the orphans in Cite Soleil.

Surprisingly, Haiti's food prices are much higher than expected (Tables 1 and 2). Depending on the diet type, the monthly food cost for a balanced and nutritious diet for a person would be around US\$300.00 per month (Numbeo.com). However, it is based on a single person's full retail price. According to the support team at the mission center, it would be much lower than that to feed orphans at facilities, and often there are plenty of food supplies in the form of relief distribution. A realistic figure is about a hundred US dollars per month per person, and so far, the financial support for food has been met through the usual channels of donation.

The source of this food supply is locally available. Therefore, attaining a proper diet for the orphans would be relatively easy if the fund is managed correctly at the facility level.

Table 1. **Recommended Minimum Amount of Money for food (2400 calories, Western food types)**

Milk (regular), (0.25 liter)	0.60 \$
Loaf of Fresh White Bread (125.00 g)	0.35 \$
Rice (white), (0.10 kg)	0.32 \$
Eggs (regular) (2.40)	0.51 \$
Local Cheese (0.10 kg)	0.60 \$
Chicken Fillets (0.15 kg)	1.81 \$
Beef Round (0.15 kg) (or Equivalent Back Leg Red Meat)	2.91 \$
Apples (0.30 kg)	0.70 \$
Banana (0.25 kg)	0.59 \$
Oranges (0.30 kg)	0.88 \$
Tomato (0.20 kg)	0.58 \$
Potato (0.20 kg)	0.96 \$
Onion (0.10 kg)	0.27 \$
Lettuce (0.20 head)	0.20 \$
Daily recommended minimum amount of money for food per person	11.27 \$
The monthly recommended minimum amount of money for food per person	349.23 \$
(assuming 31 days per month)	

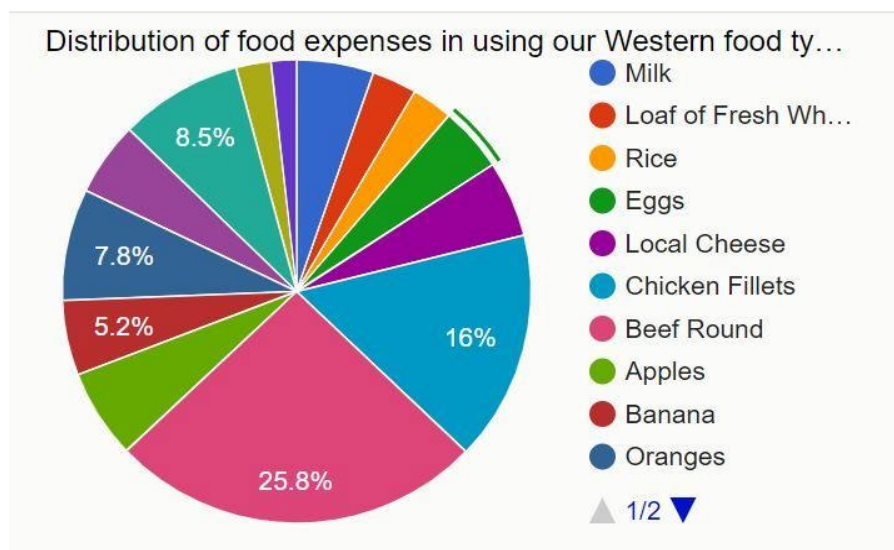
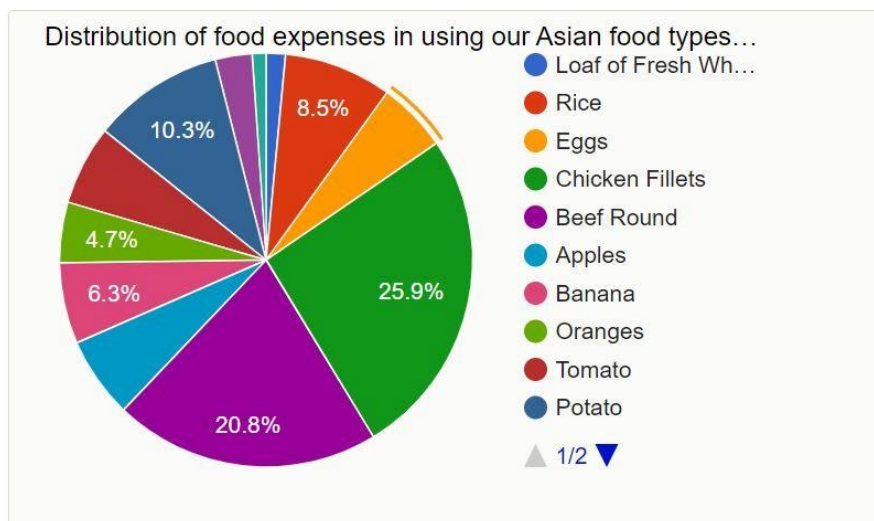


Table 2. Recommended Minimum Amount of Money for food (2400 calories, Asian food types)

Loaf of Fresh White Bread (50.00 g)	0.14 \$
Rice (white), (0.25 kg)	0.79 \$
Eggs (regular) (2.40)	0.51 \$
Chicken Fillets (0.20 kg)	2.41 \$
Beef Round (0.10 kg) (or Equivalent Back Leg Red Meat)	1.94 \$
Apples (0.25 kg)	0.59 \$
Banana (0.25 kg)	0.59 \$
Oranges (0.15 kg)	0.44 \$
Tomato (0.20 kg)	0.58 \$
Potato (0.20 kg)	0.96 \$
Onion (0.10 kg)	0.27 \$
Lettuce (0.10 head)	0.10 \$
Daily recommended minimum amount of money for food per person	9.30 \$
The monthly recommended minimum amount of money for food per person (assuming 31 days per month)	288.44 \$



Conclusion and Future Work

Coming up with a plan is one thing, but sustainability is necessary to see the fruit of our labor. I demonstrated a financially feasible and sustainable dental preventive care plan for the town of Cite Soleil to serve its 2000 orphans. It includes the use of existing facilities that already provide free physical plants for the services needed. Employing a local professional, this plan will contribute to the local economy and should be self-sufficient. The cost incurred by the foreign mission teams already traveling to Haiti is much higher than the operating expense of the dental clinic to hire a full-time local dentist.

The latest news from Cite Soleil indicates that the mission center already has a part-time local dentist in place. The plan is already in motion for its completion. With enough time and understanding of all parties involved, the project would take shape and hopefully be sustainable and scalable, to benefit the entire nation of Haiti and beyond, for other developing countries.

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