



# The Perception, Usage, and Knowledge of *Moringa Oleifera* in Mare-Brignol, Haiti after Increased Education and Access

Areeb Chaudhry; Andres F. Diaz; Chinelo Germain; Julia Nedimyer; Phillip Saad; Lorenzo Stefko; Jean Jacques Werleigh; Michael Deichen, MD; Mary Schmidt-Owens, PhD

Preethashree Anbukkarasu; Leticia Ebihara; Nichika Holdrum; Brandon Kaye; Taylor Powers

University of Central Florida

## Introduction

International Medical Outreach is a nonprofit student organization established at the University of Central Florida. Our mission aims to promote sustainability, preventive healthcare, and cross-cultural integration in underserved and isolated communities. Furthermore, we provide students with opportunities to increase their cultural awareness while being exposed to the various cultures, living standards, and healthcare systems present around the world.

In 2011, IMO's Haiti Project was established in Mare Brignol. Since then, we have been providing the community with hygiene and school supplies, essential vitamins, a free clinic alongside local physicians, and educational workshops.

In 2017, we introduced our Research Project to study the implementation and acceptance of *Moringa oleifera* in the village of Mare Brignol. *Moringa oleifera* is a highly nutritious superfood with many uses that shows unique traits such as being resistant to drought.

## Methods

This study encompasses pre-surveys followed by educational workshops, and culminates with post-surveys during a second trip roughly three months later. A total of 35 participants from 22 households were recruited from the community of Mare-Brignol (18 females & 17 males; ≥18 years) during the first trip. Translators fluent in Haitian Creole administered the survey paperwork and communicated with the households during two days of house-to-house visits. Following confirmation of inclusion to the study, consent forms were administered and pre-surveys were conducted.

The pre-survey consisted of 31 multiple choice questions that assessed each individual's perception, usage, and knowledge of *M. oleifera*. After pre-surveys were administered, an educational workshop was presented focused *M. oleifera*'s nutritional, agricultural, and industrial benefits. Thereafter, participants were given *M. oleifera* seeds, a three-month supply of *M. oleifera* powder (600 grams), and an educational pamphlet reiterating the concepts outlined by the workshop. GPS software (Gaia GPS for iOS) was used to map each participating household. This was done to facilitate navigation through the mountainous terrain and maintain reliability for future visits.

## Acknowledgements

We would like to acknowledge Dr. Michael Deichen, Dr. Mary Owens, and Dr. Raleigh Ahangari for their continued guidance and mentorship of our research project, all IMO members and officers for their dedication to serving the people of Mare-Brignol, our partner Kuli Kuli for donating the moringa powder needed for our research project, the UCF Office of Undergraduate Research for their grant, and last but not least the people of Mare-Brignol for welcoming us into their community and participating in this study.

## Abstract

**Introduction:** Nutritional deficits are a predominant concern in underserved and isolated communities. International Medical Outreach, a non-profit organization based in Orlando, FL, has identified inadequate diet, limited access to healthcare, and economic disparities as challenges faced in the village of Mare-Brignol, Haiti. Our current research aims to integrate *Moringa oleifera* (a nutrient-dense tree endemic to Haiti) in this community in an effort to alleviate nutrient deficiencies.

**Method:** The method encompasses pre-surveys, educational workshops, and post-surveys. A total of 35 participants from 22 households were recruited from the community of Mare-Brignol (18 females & 17 males; ≥18 years). Utilizing pre-surveys during house visits, an initial assessment of perception, usage, and knowledge of *M. oleifera* was obtained.

Educational workshops were then presented the day after the pre-surveys were conducted. Additionally, participants were given educational materials, *M. oleifera* seeds, and a three-month supply of powder (600 grams). In approximately three months, a post-survey will be administered to determine changes in the variables being studied.

**Hypothesis:** Based on our assessment and similar studies, we hypothesize that educational workshops and enhanced access to *M. oleifera* will increase usage and knowledge, as well as improve the perception of *M. oleifera*'s multiple benefits.

**Future Direction:** This research methodology has the potential to alleviate malnutrition and associated conditions pervasive in Mare-Brignol. This will encourage continued collaboration within this community and will also enable future sustainable initiatives across southeastern Haiti. With conclusive results, this methodology could be applied to similar communities on a global scale.

## Discussion

Based on the preliminary results that were obtained from the pre-trip that occurred in August of 2019, it is observed that approximately 91% of our research population has previous knowledge of *M. oleifera*. However, the frequency of usage of *M. oleifera* varies from 0 to 5 times a week (Figure 1). A key factor that should be noted that can influence the usage of fresh *M. oleifera* is dependent on the growing conditions experienced in Mare-Brignol each season. Having both the dried powder and fresh leaves available to the participants, we expect to see an increase in *M. oleifera* usage as well as an increased positive perception of the plant.

As shown in Figure 2, the attendance of the educational workshop hosted by IMO had varying results as well, with a majority of participants able to attend and a small number of participants who either sent a proxy household member or only a portion of the household attended the workshop. The varying levels of attendance gives us the opportunity to analyze how workshop attendance affected the results of the research.

Other factors that may influence the data obtained from the participants are the possibility of survey question bias, gaps in literacy, and the community's perception of foreign entities.

## Future Directions

The adoption of *M. oleifera* has the potential to alleviate malnutrition and associated conditions pervasive in Mare-Brignol. The education provided in our workshops regarding harvesting and processing could also lead to the formation of a possible microeconomy, as *M. oleifera* could become a potential cash-crop. Studying this application of the implementation of *M. oleifera* will enable our future sustainable initiatives across southeastern Haiti. This study could serve as a foundation for other researchers and humanitarian organizations to better aid isolated and agrarian communities similar to Mare-Brignol.

## References

- Cuneo, C. N., Dansereau, E., Habib, A. R., Davies, M., Ware, S., & Kornetsky, K. (2017). Treating Childhood Malnutrition in Rural Haiti: Program Outcomes and Obstacles. *Annals of Global Health*, 83(2), 300-310.
- Jilcott, S. B., Ickes, S. B., Ammerman, A. S., & Myhre, J. A. (2010). Iterative design, implementation and evaluation of a supplemental feeding program for underweight children ages 6–59 months in Western Uganda. *Maternal and child health journal*, 14(2), 299-306.
- Leone, A., Spada, A., Battezzati, A., Schiraldi, A., Aristil, J., & Bertoli, S. (2016). Moringa oleifera Seeds and Oil: Characteristics and Uses for Human Health. *International journal of molecular sciences*, 17(12), 2141.
- Nouman, W., Basra, S. M. A., Siddiqui, M. T., Yasmeen, A., Gull, T., & Alcaide, M. A. C. (2014). Potential of Moringa oleifera L. as livestock fodder crop: a review. *Turkish Journal of Agriculture and Forestry*, 38(1), 1-14.
- Oyekale, A. S. (2012). Nutritional Outlooks of Moringa oleifera and African Malnutrition Challenges: A Case Study of Nigeria. *Life Science Journal*, 9(4).

## Results

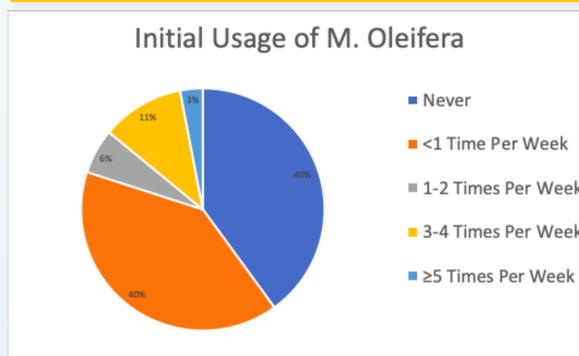


Figure 1: Initial assessment of population usage of *M. oleifera*

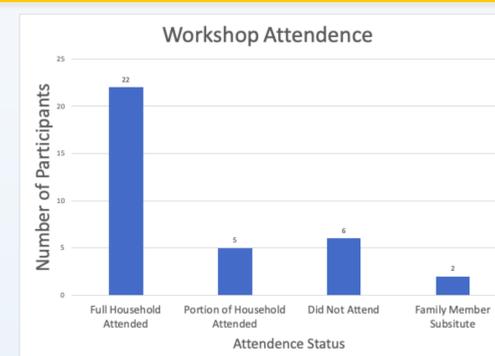


Figure 2: Initial population attendance of *M. oleifera* workshop

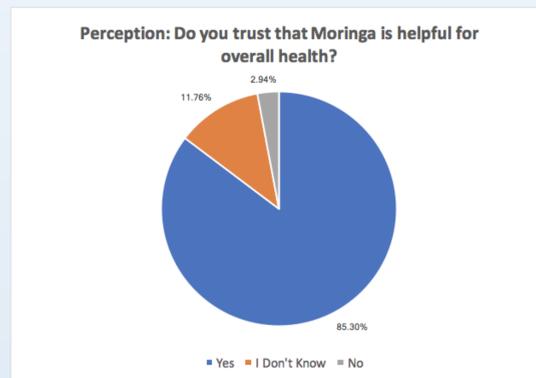


Figure 3: Initial perception of *M. oleifera* health benefits

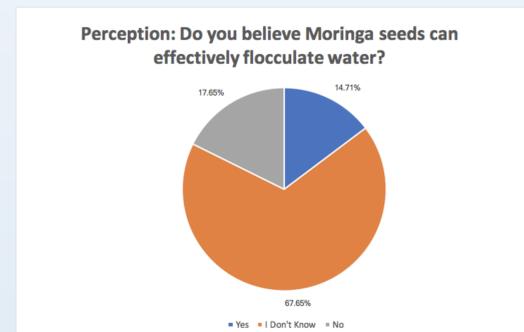


Figure 4: Initial perception of *M. oleifera*'s ability to flocculate water