

# Developing Osteopathic Manipulative Medicine as an adjunct tool for Community Health Workers in four remote underserved Peruvian Amazon communities

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## Abstract

Osteopathic Manipulative Medicine (OMM) provides a low-risk and cost-effective option to Community Health Workers (CHWs) for the treatment of musculoskeletal related complaints, especially in the context of resource limited settings. This study explores the use of OMM as an adjunct tool for CHWs working within four communities serving approximately 500 people in a region with little to no access to health care in the Lower Region of the Peruvian Amazon Jungle. The study measures the effect of Information Communication Technology (ICT) on CHW long-term retention of OMM knowledge and skills. During the initial training workshop in November of 2014, all CHWs were instructed on how to perform and record the Osteopathic Structural Exam and the Abdominal Plexus Release, and their competencies were assessed and documented. Following the initial training workshop, CHWs were instructed to utilize the OMM knowledge and skills to treat members of their respective communities. They were provided with ICT in the form of handheld computer tablets pre-programmed with educational content materials to review the OMM curricula and document OMM treatment. Six months after the initial training, CHW retention of the previously taught OMM material was re-evaluated. CHWs were scored using rubrics created based upon the information taught in November of 2014. Overall, the CHWs demonstrated a higher retention rate for understanding and performance of the Abdominal Plexus Release (APR) than for the Osteopathic Structural Exam (OSE). Subsequently, CHWs were re-taught how to perform the OMM techniques and were reminded to use their handheld computer tablets in order to support knowledge retention of the landmarks needed to complete the Osteopathic Structural Exam. Retention of this material will continue to be assessed in November of 2015, one year after the initial training. Furthermore, application of OMM techniques by CHWs, as documented through their handheld computer tablets, will be measured and re-evaluated in November of 2015.

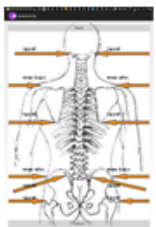


Figure 1. Interactive Structural Exam  
An interactive structural exam was developed onto a tablet application for CHWs to record and save results when they treat future patients. This was also used for training purposes in this research.

## Introduction: CHWs and OMM

Community Health Workers (CHWs) are important providers of primary health care services in low- and middle-income countries (LMICs). CHWs are currently utilized to provide a wide range of treatment and diagnostic skills to curb high maternal and child mortality rates, along with other prevalent morbidities in their respective work sites. Although the influence of Osteopathic Manipulative Treatment (OMT) has grown rapidly, little focus has been directed toward OMM integration into a CHW training curriculum. Combined with its relatively safe treatment, OMM offers many hands-on treatments and procedures that can be easily instructed and with little to no sustained economic cost to poor communities.

## November 2014: Initial Training Workshop

Our original hypothesis was that Osteopathic Manipulative Medicine (OMM) can be utilized as a tool for sustainable patient care by CHWs in the Peruvian Amazon. Our two fundamental aims were the following: (1) to assess CHW interest in OMM and their willingness to learn OMM, and (2) to design and implement an OMM training program for CHWs. CHWs concluded that CHWs among four rural Amazonian communities expressed great interest in learning and practicing OMM within their respective communities and that OMM can be a sustainable and effective tool used in communities with little to no health access.

## Hypothesis and Project Aims: June 2015

- Hypothesis: knowledge of Osteopathic Manipulative Medicine theory and techniques can be retained over time by Community Health Workers.
- Aims: to evaluate CHW knowledge retention of the Osteopathic Structural Exam and the Abdominal Plexus Release techniques

## Methods

- Osteopathic Structural Exam (OSE) and the Abdominal Plexus Release (APR) were taught in 2014.
- Subsequently, CHWs were instructed on how to utilize an application created for a handheld computer tablet (Figure 1) to document the OSE findings before and after performing the APR.
- Competency in learning the OSE, APR, and documenting the findings was assessed in November 2014 and was found to be 100%.
- CHWs were instructed to continue to practice the OSE and APR and document the findings during patient encounters throughout the course of the following eight months.
- In June of 2015, a follow-up assessment was performed to determine the retention rate of the OSE and the APR.
- CHWs were scored using rubrics created based upon the information taught during November 2014.



Figure 2. CHWs personally selecting most appropriate health supplies

## Methods (continued)

- The rubrics used to assess CHW competency in OSE utilized the following structure:
  - 1 point was given for CHW identifying each correct landmark
  - 0.5 points were given for CHW identifying each correct landmark but not measuring correctly
  - 0 points were given for CHW not knowing the correct landmark
- The rubrics used to assess CHW retention in APR utilized the following structure:
  - 1 point was given for placing patient in correct position
  - 1 point was given for understanding why the technique is performed
  - 1 point was given for placing hands in correct location
  - 1 point was given for application of correct pressure during patient relaxation and maintaining pressure throughout the technique
  - 1 point was given for performing technique until tissue response was palpable
  - 0.5 points were given for partially performing task
  - 0 points were given for omitting task



Figure 3. Skills competency exam: CHW performs APR in one of the authors as the task being recorded and evaluated

## Results

- In November 2014, each CHW performed the Osteopathic Structural Exam (OSE) and the Abdominal Plexus Release (APR) with 100% accuracy.
- Four out of the six (67%) of the Community Health Workers (CHWs) enrolled in the original training program in November 2014, completed the OMM knowledge retention skills exam in June 2015.
- The following results were attained during the CHW knowledge retention skills exam in June 2015:

### Osteopathic Structural Exam

- The mean score attained was 50%
- The median score attained was 50%
- The high score attained was 50%
- The low score attained was 25%

### Abdominal Plexus Release

- The mean score attained was 85%
- The median score attained was 85%
- The high score attained was 100%
- The low score attained 50%

## Discussion

- Our results demonstrated that OMM concepts and techniques were retained over a six-month time period among CHWs with limited prior knowledge or training on the subject.
- The discrepancy in retention of the Abdominal Plexus Release (APR) (85%) over the Osteopathic Structural Exam (OSE) (50%) may be due to differences in technique difficulty, effectiveness of initial training, or continued practice of the technique since initial training.
- The OSE was taught using medical language for all anatomical landmarks and has more steps to complete than the APR. The combination of the difficult vocabulary combined with the more complex procedure may have been a factor in lower retention rates for the technique.
- The purpose of utilizing the OSE as a way to determine the efficacy of the procedure performed may not have been emphasized sufficiently.
- CHWs were reminded to utilize the pre-programmed computer tablets with the interactive structural exam feature to help guide them in locating landmarks and determining leviness.

## Conclusion

- CHWs among four rural Amazonian communities retained and were able to perform OMM techniques six months after initial training.
- CHWs among four rural Amazonian communities continued to express great interest in learning and practicing OMM within their respective communities.
- CHWs expressed a desire to be taught and learn more OMM techniques due to its effectiveness and utility to treat common musculoskeletal complaints.
- OMM can be a sustainable and effective tool used in communities with little to no health access.
- Future osteopathic international outreach endeavors should equip CHWs with OMM knowledge.

## Future Directions

- A larger CHW training program will be conducted in November 2015. New CHWs will be taught the Abdominal Plexus Release (APR) and Osteopathic Structural Exam (OSE), and their initial interest and competency in the techniques will be recorded.
- Retention of the APR and OSE in CHWs trained in November 2014 will be measured in November 2015.
- New OMM treatment protocols and curriculum will be developed and included in the November 2015 training.
- Although the sample size was small, the results from this research will help guide future training programs whether in Peru or another country.



Figure 4. CHW concentrates on proper performance of CA release

## References

Haqueyari, Razi, Maribel Panadea, Pablo Peltarano, Sofia Torrez, Silvia Marín, Alexander Tenorio, Kimberly C. Bousquet et al. 2012. "Socio-Demographic And the Development of Mobile Information Strategies in the Low Transmittable Setting." *Acta Tropica* 121 (3): 248-252. doi:10.1016/j.actatropica.2012.01.002.

Ponzo-Kranga, J. E., M. D. Jangar, K. Dunn, and J. Zhang. 2011. "Performance Factors of Mobile Rich Media, Job Aids for Community Health Workers." *Journal of the American Medical Association* 305(10):125-31. doi:10.1001/jama.2010.19825.

Tanaka, Naoko, Miki Iikawano, and Angela Barajas. 2013. "Preparing the Next Generation of Community Health Workers: The Power of Technology for Training." <http://www.daberg.com/documents/Technology and CIMW.pdf>.

Javanparaz, Sara, Fran Diaz, Ronald Labaree, David Sanders, Zahrah Rajabi, and Ghahramani Irfan. 2012. "The Dependence of Community Health Workers Training in Iran: A Qualitative Study." *BMC Health Services Research* 12 (1): 241. doi:10.1186/1474-2840-12-241.

Kahn, James G., Joshua S. Yang, and Kahn, James G. 2010. "Mobile Health Needs And Opportunities In Developing Countries." <http://www.healthaffairs.org/papers/20100522a>.

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