



# Developing mHealth System to Improve Health Services for the Burmese Migrant Population Living in the Mae Sot Region of Thailand

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**Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School**

**Date:** 9 February 2019

**Student Name:** Agatha Brzezinski, MPH

**Scholarly Report Title:** Developing mHealth System to Improve Health Services for the Burmese Migrant Population Living in the Mae Sot Region of Thailand

**Mentor Name(s) and Affiliations:** Katharine Morley, MD, MPH, Dept of Medicine, Massachusetts General Hospital

**Collaborators, with Affiliations:** Beth Lopez, MPH; Assoc. Prof. Dr. Wongsu Laohasiriwong, Vice Dean, Chairperson of the Doctor of Public Health program, Khon Kaen University School of Public Health

## **Abstract**

### **TITLE: Developing mHealth System to Improve Health Services for the Burmese Migrant Population Living in the Mae Sot Region of Thailand**

Agatha Brzezinski, Beth Ann Lopez, Dr. Katharine Morley, Dr. Wongsu Laohasiriwong

**Purpose:** Mae Sot, Thailand lies on the Thai-Burmese border and has a significant population of undocumented Burmese migrants. Mobile health (mHealth) applications have been increasingly used in global setting to improve health care delivery. This scholarly project aims to determine the feasibility of implementing an mHealth intervention in the Burmese migrant community in Mae Sot.

**Methods:** Key informant interviews were held with individuals from several organizations serving the Burmese migrant worker population in Mae Sot, including the Mae Tao Clinic and Mae Sot Hospital. Interviews were also held with several Burmese migrants at the Mae Tao Clinic and in the nearby migrant community in Phop Phra, Thailand.

**Results:** Most local Burmese migrants access health care at the Mae Tao Clinic instead of through Thai public health services such as the Mae Sot Hospital. However, both the Mae Tao Clinic and Mae Sot Hospital staff identified poor antenatal care as the key issue facing the Burmese migrant population, due in part to poor coordination, difficulty accessing care, and poor education. All interviewed Burmese migrants reported having access to a mobile phone with internet and reported high rates of smart phone usage in their communities.

**Conclusions:** Poor antenatal care was most often identified as the principal health concern in the Burmese migrant population according to several local providers. All patients and migrant workers reported access to at least one mobile phone or tablet with easily accessible internet access. Implementation of an mHealth application in this population may offer an opportunity to improve antenatal care coordination and patient education.

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## **Glossary of Abbreviations**

ANC: antenatal care

ASEAN: Association of Southeast Asian Nations

IRC: International Rescue Committee

KKU-SPH: Khon Kaen University School of Public Health

mHealth: mobile health

MPH: Master's in Public Health

MTC: Mae Tao Clinic

SAW: Social Action for Women

SMRU: Shoklo Malaria Research Unit

## **Section 1: Introduction**

Along the Thai-Burmese border lie nine refugee camps that, as of December 2016, are home to approximately 102,000 refugees who have fled violence in Burma.<sup>1</sup> However, this value does not include internally displaced people still on the Burmese side of the border nor undocumented migrants who have entered Thailand and live along the border, but remain unregistered and live outside of the camps.

In particular, Tak Province in northeastern Thailand has a substantial population of migrants from Burma, principally concentrated in the city of Mae Sot. As a border town, Mae Sot lies on the Moei River (demarcating the border in this area) opposite the Burmese town of Myawaddy. Estimates of the number of Burmese migrants living in Mae Sot alone average around 200,000 but range up to half a million.<sup>1-3</sup> Many migrants are undocumented and work in agriculture or in local factories. The Khon Kaen University School of Public Health (KKU-SPH) is working in collaboration with the International Rescue Committee (IRC) to improve health care services for the Burmese migrant population in this city. However, the health status and barriers to care in this population are still poorly understood.

Thailand offers Universal Health Coverage (“30 baht scheme”) for citizens in addition to a migrant health insurance scheme for registered migrants. However, the migrant health insurance scheme is not highly utilized because of the cost and administrative difficulty of obtaining insurance. Consequently, many migrants seek health care at centers unaffiliated with the Thai government. One such center in Mae Sot is the Mae Tao Clinic, which serves a migrant population of approximately 150,000-250,000 through about 110,000 visits each year. Of the clinic’s mostly-Burmese patient base, approximately 52% live in Thailand and 48% in Burma.<sup>4</sup>

Many challenges in the provision of health services to this population may potentially be addressed by developing and implementing a mobile health (mHealth) intervention such as a patient record, disease monitoring, or referral system. The KKU-SPH, as a leader in ASEAN and the Mekong region with educational partnerships with many countries in this area, held its first-ever mHealth Bootcamp and Hack-a-thon aimed at “Bringing together innovators to co-create digital solutions for health in Thailand” in January 2017.

Using key informant interviews, this scholarly project aims to determine the feasibility of implementing an mHealth intervention in the Burmese migrant community in Mae Sot. The specific aims of this project are as follows:

- Explore the health status and priority areas of Burmese migrants, especially those potentially able to be addressed using mHealth technology; health literacy; barriers to care; and the health care delivery system in Mae Sot, Thailand
- Assess the policy and economic issues impacting health status and health care access for Burmese migrants
- Assess Burmese migrant access to and use of mobile technology
- Develop a framework for a pilot mHealth intervention to improve the health status of Burmese migrant workers

## **Section 2: Student role**

At the time of the project, I was a medical student between my third and fourth year of medical school concentrating in Global Health for my Master's in Public Health (MPH) and my partner had a policy background and was concentrating in Health Policy for her MPH. By working together at all stages of this project, we were able to use our backgrounds to create a more comprehensive approach at addressing issues. Prior to our departure, I learned as much as I could about the health system in Thailand and about diseases and conditions that are common around Mae Sot. During our interviews, my questions were focused more on social determinants and health care access and delivery. I was also able to ask about multiple steps critical to the delivery of health care given knowledge I had learned in medical school (e.g. accessibility of diagnostic tests, certain medications and procedures, availability of cold chain, etc.). Once we returned, I was able to use information I had learned during my clinical rotations to ensure that the application was going to be practical for users but also sound from a medical standpoint.

My partner approached this process similarly but from a policy standpoint. Prior to our departure, she became an expert in health policy in Thailand as well as gained working fluency in other relevant policies. When we conducted our key informant interviews, she asked about the effects of certain policies on migrant health. She was responsible for determining how the application would fare legally in Thailand (especially in terms of ensuring privacy for undocumented migrants). Her aim was also to identify policies that we could use in the implementation of our application.

Dr. Wongsu Laohasiriwong supervised our work while in Thailand and Dr. Morley mentored us while we were in the United States.

### **Section 3: Methods**

Dr. Wongsu Laohasiriwong had significant experience working in the area around Mae Sot and many connections to individuals within the area. She helped us select key informants and helped coordinate interviews for us. Ultimately, key informant interviews were held with individuals serving the Burmese migrant worker population in Mae Sot, including individuals at the following organizations: 1) Mae Tao Clinic (MTC), 2) Mae Sot Hospital, 3) International Rescue Committee (IRC), 4) Social Action for Women (SAW), and the 5) Shoklo Malaria Research Unit (SMRU). Many individuals interviewed spoke English; however, Dr. Laohasiriwong or MTC staff provided translation when it was required. Interviews were also held with several Burmese migrants at the MTC and in the nearby migrant community in Phop Phra, Thailand. Prior to each interview, we notified the interviewee of our project and its aims and obtained oral consent, including to record the interview by audiotape in the case of migrants within the Mae Tao Clinic. Initial interviews were broad and aimed to gather information about migrant health and health care delivery as we explored potential topics for a mobile health application. Topics included prevalent diseases and health concerns, burden of disease, access to healthcare, safety and security concerns, health education, and cultural considerations relevant to healthcare. In addition, initial interviews addressed mobile phone (including smart phone) use, access, and internet access within the Burmese migrant community around Mae Sot. My partner and I reviewed our interviews at the end of each day. Once we identified potential health topics, we focused our subsequent interviews to the topics (with the aim of selecting one) and to contributing factors. During the interviews, we discussed the idea of a mobile health application and asked key informants for ideas for topics that they thought would be best addressed with an application. We frequently reflected our findings back to our interpreters and interviewees and asked for feedback to confirm accurate understanding as well as to ensure that the potential features of the application we were considering were supported by the interviewees.

Initial background research was conducted between October and December 2016. All key informant interviews were conducted between January 3-19, 2017.

### **Section 4: Results**

From our key informant interviews, we gathered the following information:



- Most local Burmese migrants access health care at the MTC instead of through Thai public health services such as the Mae Sot Hospital. The MTC provides free care, has a good reputation, and offers shorter waiting times than at Thai public health facilities. The MTC also employs staff fluent in several languages common among the Burmese migrant population, including Burmese, Karen, and Mon. In contrast, interpreters are not as readily available at Mae Sot Hospital, so Burmese migrant patients who can speak Thai often interpret for other members of their community.
- MTC patients who require advanced care are referred to Mae Sot Hospital, but many are unable to pay out-of-pocket costs. Mae Sot Hospital staff reported a loss of 40-50 million Thai baht (approximately 1.28-1.60 million USD) each year in uncompensated care provided to migrants.
- Both MTC and Mae Sot Hospital staff identified poor coordination of care as a key issue in the Burmese migrant population. This is due in part to this population being mobile, without a connection to a primary health care center where their health records are kept. Other contributing factors faced by providers include assigning individual identification numbers to patients because of difficulty in understanding and transliterating patient name from the patient's native language to Thai/English, and patients not providing accurate information about their names out of fear of legal repercussions.
- MTC staff, many of whom themselves do not possess legal papers, reported difficulty working in the community out of fear of being stopped at police checkpoints, which are common in the area. However, some MTC staff have been issued an "MTC Card" that police unofficially recognize. When a staff member presents the card at a checkpoint, a police officer allows the staff member to proceed with the understanding that the staff member is doing his or her job in the community.
- All interviewed Burmese migrants reported having access to a mobile phone with internet and reported high rates of mobile phone usage in their communities. Most interviewed migrants had smart phones and used Facebook on a regular basis. Several migrants reported accessing internet at their place of employment; many factories in the region provide free Wi-fi to their employees. Thai SIM cards function in the neighboring Burmese town of Myawaddy.

- Both MTC and Mae Sot Hospital staff identified antenatal care (ANC) as their principal concern affecting the health of this population. Many migrants do not complete the recommended five ANC visits. Barriers to ANC include fear of being stopped at police checkpoints and long distances to health facilities. Although one key informant expressed concern about faith in traditional practices as being a barrier to migrants seeking ANC, all ANC patients interviewed at the MTC reported widespread use of the Thai-issued Maternal and Child Health Handbook (“pink book”) among the community and trust in modern health care over traditional medicine. (Figure 1) Some prefer to deliver at Mae Sot Hospital because they receive documents that grant children more legal rights resulting from being born in Thailand at a public hospital.
- The “pink book” is available in Thai, English, and Burmese. Every woman in Thailand receives one per pregnancy; it is used to document the pregnancy through all five ANC visits through childbirth and into early childhood (including serving as a vaccination record for the child). It also contains educational information about pregnancy, caring for an infant and young child, and normal development. While the Thai and English versions are thick (the English version is 102 pages long), the Burmese version is significantly smaller (the newest version is 26 pages long, but one outlying clinic stated most Burmese women received one that was only 16 pages long); one key informant stated that the size discrepancy was due to low literacy rates among the Burmese migrant population. However, all but one of the interviewed ANC patients at the MTC was literate and the one that was not, stated that her husband would read to her from the pink book. All interviewed ANC patients at the MTC stated that the pink book was their principal source of learning about ANC.

## **Section 5: Discussion, Limitations, Conclusions, and Suggestions for Future Work**

Using the information acquired from key informant interviews and from programmers at the Khon Kaen Hack-a-thon, a basic schematic for an mHealth application was developed to improve ANC education, access, and coordination in the Burmese migrant population in Mae Sot. (Figure 2) The application will have two modes: a patient mode and a provider mode. The patient mode will provide timed updates and pertinent ANC information from the Maternal and Child Health Handbook (“pink book”), similar to US pregnancy tracking applications. Patients

will also receive information relevant to any medical conditions they have (e.g. gestational diabetes). Patients will log in using their fingerprint in order to ensure coordination of ANC.

ANC providers will be able to log in through the patient mode to access the provider mode. Providers will be able to access relevant clinical history, including information about a patient's prior ANC visits. Providers will also be able to make edits so that new relevant information will appear in the patient mode as new conditions arise and as the pregnancy progresses. Providers will also log in independently (and not solely via the patient mode).

The next step in this project would be to develop a prototype of the application and then to further develop the educational content of the application based on the local context at MTC and the Thai-Burmese border area. It would also be important to further explore the possibility of linking collected information into the Thai Care Cloud (a Thai national electronic health record currently in development) in order to improve coordination of health delivery for Burmese migrant patients during their pregnancies, across their pregnancies, and for other medical conditions. Privacy considerations during this step would be essential. Another step would be to define how the application may be used to coordinate care through the postnatal period. Finally, a feasibility and stakeholder analysis could be conducted to field test the application, from which lessons could be used to improve the application and maximize chances for successful implementation.

Over the course of this project, we met with representatives from the principal health care sites serving the Burmese migrant population in Mae Sot as well as several migrants in the community as well as at the MTC. However, a limitation of this study is that we were not able to speak with more key informants. It would have been valuable to speak to a more diverse set of individuals (administrators as well as health care providers) at each site to see if they identified other concerns about the provision of ANC to this population. In addition, it would have been helpful to speak to more ANC patients at various locations in order to further explore their needs and ideas for potential solutions. It would be particularly valuable to speak to women in the community who were experiencing difficulty accessing ANC and to explore contributing factors. Another limitation is that there may have been a degree of response bias during the key informant interviews once asked about using mHealth in the population as well as social desirability bias when discussing the frequency of use and educational value of the "pink books".

In conclusion, antenatal care among the Burmese migrant population was identified as the principal concern of both the Mae Tao Clinic and the Mae Sot Hospital health care providers. Many women receive fewer than the recommended five ANC visits, which is largely ascribed to poor coordination of care, low levels of education, and frequent police checkpoints along key routes to health care facilities, leading to challenges in health care access due to fear of deportation. In addition, ANC patients at the Mae Tao Clinic reported strong interest in but poor access to educational materials related to ANC.

All patients and migrant workers reported access to at least one mobile phone or tablet. Internet access is readily available in public spaces and in workplaces. Use of an mHealth application may represent an exciting opportunity to improve ANC care coordination and patient education in this vulnerable population.

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## Tables and Figures

**Figure 1.** Maternal and Child Health Handbook (“pink book”)



**Figure 2.** The Border Health Application outline

