Intervention Proposal Paper: Pamphlet Distribution and Poster Presentation on Type 2 Diabetes Mellitus in the Kok Si Community on December 1st, 2013

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Abstract

Northeast Thailand has been disproportionately affected by the nutrition transition and the subsequent type 2 diabetes mellitus (DM2) epidemic. The Kok Si village, located outside of Khon Kaen, exemplifies the growth of the DM2 epidemic, as DM2 represents a large health problem within the community. Research conducted within the community demonstrates a misunderstanding of risk factors, proper diet and physical activity habits to prevent the development of DM2. Specifically, villagers believe that if they have no family history of DM2, they cannot develop DM2. In addition, misconceptions exist about appropriate diets for diabetics. To increase awareness in the Kok Si community, the research group proposes a pamphlet distribution and poster presentation, as requested by the villagers in the focus group. The intervention will be implemented on Saturday, November 30th and Sunday, December 1st and will cost 8,225 baht. Success of the intervention will be analyzed by using a pre and post-test on common DM2 misconceptions identified during previously completed research in Kok Si.
Introduction
The Northeast of Thailand has been disproportionately affected by the diabetes epidemic in recent years. The nutrition transition has resulted in an increased prevalence of type 2 diabetes mellitus (DM2) in Thailand as processed foods high in sugar and fat are consumed more frequently than fresh foods. Furthermore, a lack of health education and health services in the Northeast has exacerbated the difficulty of combating DM2. Moo 7 of Kok Si, a village of 600 located directly outside of Khon Kaen in the Northeast of Thailand, will be setting for our intervention. We will be targeting Kok Si women age 45 and above, to best address those at risk for developing DM2. Recent research conducted in the Kok Si village has shown a need for additional DM2 health information among villagers regarding DM2. Specifically, many villagers have misconceptions regarding the risk factors of DM2. In addition, villagers expressed an interest in information regarding dietary habits and physical activity to prevent DM2. The following intervention proposal aims to fulfill the need for a higher community understanding of risk factors of DM2, proper dietary and exercise habits in order to more effectively prevent DM2 in Kok Si village.

Data Results and Analysis

Data Results

Semi-Structured Interviews. According to the headman, DM2 represents a big health problem in the Kok Si community. DM2 treatment consists of seeing physicians at the district hospital, which is located eight kilometers away. Sometimes families are able to carpool to the hospital; however, frequently individual families must provide transportation for family members needing care. For community prevention, Kok Si promotes physical activity through tri-weekly one-hour exercise classes held at the local temple and soccer practices held at the school. Limited
nutritional education is provided, as the headman believes it is difficult to discuss eating habits because villagers do not want to sacrifice taste for health. He believes nutritional education would be helpful to the community, as villagers do not understand DM2 and its connection with nutrition. The village health volunteers (VHVs) have basic knowledge about healthy eating, but do not feel that they are able to educate other villagers with their current knowledge. The headman indicated that a workshop would be best to inform the community members about the risk factors and prevention of DM2.

According to the head VHV, 20 out of 846 villagers or 2.36% of the community has DM2 and it represents a big problem in the community. Community members are diagnosed with DM2 at the district hospital with a fasting blood glucose level test. Individuals with DM2 are instructed to avoid tamarind, mangoes and watermelon and to attend the triweekly hour-long community exercise classes by the VHVs. Most of the DM2 positive individuals attend these classes. Lack of attendance is often due to conflicts with work schedules or the difficulty level of the class. He wants a doctor to come to the community each month to increase access to health care services.

Survey. Using excel, we analyzed survey data collected from 33 members of the Kok Si community over the age of 45, to determine the prevalence of DM2, previous DM2 knowledge, daily nutrition and daily exercise habits. The average age of the surveyed participants was 60.4 years old with females representing 87.9% of the surveyed population. DM2 affected 15% of the population and the participants had been diagnosed with DM2 for two to twenty years. Seventy-eight percent of the surveyed population believed they were not at risk, most often because of a doctors exam or because they had no family history of DM2. Of the participants who believed they were at risk, they believed that consuming sticky rice or a family history of DM2 predisposed them to developing DM2. Unhealthy diet was most frequently viewed as a DM2 risk
factor (57.5% of villagers), while age and family history were least often listed as a DM2 risk factor (18.1% of villagers) (Figure 1). Villagers most often received information about DM2 from the district hospital (57.5%), followed by villager health volunteers (24.2%) (Figure 2). Meals are eaten on average 3.06 times a day. Sticky rice and vegetables are eaten most frequently (2.6 times per day) by villagers, while noodles are eaten least often (0.46 times per day). Snacks are consumed around 1.27 per day, with fresh food representing 72.4% of snacks and processed food representing 27.6% of snacks. Of the 33 surveyed community members, females cooked in every house but one. Ninety-three percent of villagers bought food at the market and 15% also bought food at a store in town. The overwhelming majority of community members ate all meals at home, with only 9.09% of villagers consuming at least one meal outside of the home.

Exercise classes were attended by 36.4% of surveyed community members and none of the participants attended community soccer practices. Of the surveyed villagers, 60.6% of their professions require physical activity, while 39.4% of their professions are sedentary. None of the participants smoked and 12.1% consumed alcohol occasionally or for special occasions. Community members exercise an average of 4.48 times per week for an average of 21.2 minutes each time. Exercises included arm movements, biking, attending a community exercise class, hula hooping, Thai dancing and running.

**Focus Group.** A focus group was conducted with five villagers, four of which were VHV's. The VHV's indicated that the DM2 patients do not trust the VHV's because they are not doctors and since we are outsiders, patients would trust students more. They said DM2 patients are instructed to avoid sticky rice and anything that is too sweet or too salty. Information on healthy snack options and dietary choices to prevent DM2 was requested along with exercises that were less
strenuous than those provided in the exercise classes. When asked how the community would prefer to have the information portrayed, the participants indicated a poster presentation and brochures with relevant information would be most effective. They requested for the brochures to be delivered by hand to community members, as many community members may not be able to attend the poster presentation due to health or schedule constraints.

Observation. We surveyed the food purchasing options within Kok Si, while photographing a variety of healthy options available to villagers. We looked for both food and drink options, while ensuring that all options were affordable. We found four stores within Moo 7. Within the four stores we found milk, eggs, bananas, oranges, vegetables and nuts available for less than 30 baht.

Consultation. After conducting initial research, we met with Ajaan Pattara of Khon Kaen University. After presenting our findings he informed us that the Thai Ministry of Public Health promotes arm exercises for the elderly. The Ministry of Public Health suggests swinging arm exercises; however, they do not address leg exercises or walking exercises. Ajaan Pattara additionally suggested that we incorporate seated leg exercises into our project coupled with information regarding when individuals should stop exercising (for example, if they feel pain or feel faint).
**Figure 1.** The average percent of villagers who believed that eight behaviors contributed to the development of DM2 in Kok Si. Thirty-three villagers over the age of 45 were surveyed. 57.5% of surveyed villagers thought an unhealthy diet caused DM2, while only one villager or 3.03% indicated alcohol consumption in the “other” category as a risk factor that can contribute to the development of DM2.

**Figure 2.** The average percent of villagers (%) that received information from eight sources about DM2. One villager reported gaining information from the community loudspeaker and one from the community leader. The majority of villagers indicated that they received information about DM2 from the district hospital at 51% or 17 participants.
Figure 3. The average amount of times per day that Kok Si villagers consume ten types of food. Villagers average consuming sticky rice, at 2.6 times per day and vegetables at 2.6 times per day the most and noodles the least at 0.5 times per day.

**Data Analysis**

Information collected through the semi-structured interviews, surveys, a focus group and observation indicated that there are a number of gaps regarding the understanding of DM2 in the Kok Si community. Although the prevalence of DM2 is estimated at 20 villagers, all surveyed villagers indicated that DM2 is a huge health problem within Kok Si. The understanding of DM2 risk factors is often incomplete; although, 57.8% of the surveyed individuals were able to dictate that an unhealthy diet can cause DM2, only 18.1% knew that increased age and hypertension are DM2 risk factors (Figure 2). In addition, villagers believed if none of their family members had DM2, they could not develop DM2. All community members over the age of 45 are at risk for DM2 and that information should be conveyed so villagers pay attention to their nutrition and physical activity and prevent developing DM2. Information regarding DM2 was often not relayed in the community, with the greatest source of community centric information regarding DM2 being VHVs at 24.2%. A large minority of the population (12.1%) reported having no previous DM2 education.
The facts demonstrate a need for DM2 information to be relayed within the community. This is especially pressing as access to health care presents a difficulty for some villagers as the district hospital is 8 km away from Kok Si and a private car is necessary to reach the hospital. Nutrition represented a large grey area while collecting data. Many community stakeholders (head VHV, interviewed VHV, headman) suggested that nutrition education would be greatly appreciated, as the interconnection between nutrition and DM2 is unclear amongst community members. Basic nutritional education is often given to villagers: consume limited amounts of sweet foods, salty foods and sticky rice. However, the information is rarely explained to villagers. A significant minority of the surveyed participants attended exercise classes (36.4%); however, 21.1% of participants indicated they do not engage in any physical activity. Demonstrating simple daily exercises that can be performed from home that involve both leg and arm movements could increase physical activity among this group; addressing community members who indicated that lack of exercise class attendance was due to difficulty or schedule conflicts.

Overall, the data demonstrates a need for DM2 education relating to risk factors, nutrition and physical exercise to empower community members in maintaining their own health. As requested by the focus group, a poster presentation and pamphlets will be produced to correct DM2 misconceptions and initiate further DM2 education.

**Intervention Proposal**

As requested by the community, our intervention will consist of a pamphlet distribution and poster presentation. The pamphlets will be distributed door to door to every house in Moo 7, with an overview of DM2, nutrition information and exercise information. The pamphlets will also be used to promote the poster presentation that will be occurring the following afternoon. During pamphlet distribution, we will have the opportunity to review the material in the pamphlet with
community members. Since all community based services occur at the temple and community members expressed concerns over access to health care services, the pamphlet distribution will allow us to reach villagers who may be unable to attend the poster presentation. At the request of the community, we will have a poster presentation at the temple the following afternoon. The presentation will again consist of an overview, nutrition and exercise portion.

Content

Overview. The overview will first define DM2 as a disease that is the result of high levels of sugar in the blood. We will then discuss different risk factors, clarifying the misconception regarding family history and the development of DM2. Next, we will identify signs and symptoms of DM2 ending with the recommendation to visit the doctor for frequent check-ups, medication refills and concerns (Mayo Clinic Staff, 2013).

Nutrition. The nutrition segment of the DM2 education intervention will be composed of two segments. Part one will feature education regarding servings of food groups, with an emphasis on limiting the serving size of sticky rice. Additionally, this segment will provide references for consuming an appropriate serving of sticky rice. Part two will provide villagers with alternatives snacks and drinks that can be purchased in Kok Si. Villagers will be shown photos of healthy food alternatives that can be purchased at local convenience stores (for example, unsalted nuts and mango). We also aim to clear up the misconception among community members that mango is not to be eaten by diabetic patients; on the contrary, fruits should be consumed in moderation. There is evidence to suggest that mango can help level blood sugar levels (Diabetes UK, 2006). We will also identify sugary drinks consumed in the community (coffee packets, bubble tea) and offer low-sugar alternatives such as fresh fruit water.
Exercise. To begin discussing exercise, we will first inform Kok Si community members that they should aim to exercise for thirty minutes a day, fifteen minutes in the morning and fifteen minutes in the evening (CDC, 2011). Next, we will conduct an exercise class, showing participants a variety of exercises that can be completed at home. Bell et al. recommends specific exercises for individuals over 60 and the majority of the exercises can be completed sitting down using both the arms and the legs (n.d.). Finally, we will provide tips for exercising and warning signs of when to stop exercising such as feeling pain or feeling faint.

Pre and Post Test

To measure the success of the intervention, we will be conducting a pre and post survey to gage villagers understanding of DM2 before and after the intervention. Before the intervention takes place, villagers will be asked to answer basic questions regarding DM2 focusing on family history, the consumption of fruit, the appropriate level of physical exercise and the symptoms of DM2. After the intervention, the same questions will be asked for a second time. The questions will be presented on butcher paper in a poster format. Participants will be given numbered stickers to place near the questions to create a more informal, interactive survey experience.

Goals of Intervention

The planned intervention in Moo 7 of the Kok Si community aims to discuss and provide information regarding DM2 for villagers above the age of 45. We first hope to provide basic information regarding DM2 including signs and symptoms, educate villagers on risk factors and understand when they should see their doctor. We hope to inform community members of alternative snacks and beverages such as fruit, nuts, vegetables, which can be purchased within Kok Si. Finally, we hope to provide exercises that can be done at home and are not strenuous to the body while stressing the importance of stopping exercise at any physical discomfort. By the
end of the intervention, we hope that villagers feel more comfortable understanding and discussion the symptoms, prevention methods and the importance of diet and exercise in relation to DM2.

**Timeline**

**Prior to Intervention Day**

Monday, 25th November: 5:30PM: leave for Kok Si, 6:00PM-7:00PM: host focus group for individuals ages 45 and above, 7:00PM-7:45PM: speak with village health volunteers about possible intervention plans and photograph healthy snack options available in Kok Si. Tuesday, 26th November: 1:00 PM: consultation with Ajaan Jen, evening: send final poster and pamphlet information to Ajaan Nai. Wednesday, 27th November: finalize proposal paper, begin scripting for the presentations and submit paper. Thursday, 28th November: 1:00-5:00PM: presentation. Friday, 29th November: 10:00 AM: compile and finalize scripts for presentation, 1:00PM: first rough run through of presentation 5:00 PM: run through. Saturday, 30th November: 10:00 AM: Final run through, afternoon: distribute pamphlets in Kok Si Community. Sunday, 1st December: Afternoon: presentation.

**Intervention Day: Tuesday, 1\textsuperscript{st} December**

8:00AM: Depart from CIEE with the Kok Si Sanitation group, 9:30AM - 10:00AM: check in with community headman, 10:00AM-11:00AM: purchase snacks from local stores, 11:00AM-12:00PM: participate in Kok Si Sanitation group project, 12:00PM-1:00PM: community lunch, 1:00PM-1:30PM: set up chairs at the temple and hang up poster, 1:30PM-1:45PM: introduction, present risk factors and symptoms, 1:45PM-2:05 PM: go over nutrition portion, discuss alternative snacking options, hand out alternative beverage options and snacks, 2:05PM – 2:25PM: exercise instruction, 2:25PM – 2:35PM: thank participants for attending, 2:35PM –
2:50PM: ask community members to place stickers on the chart regarding what they have learned, thank them from their time, 3:00PM – 3:30PM: clean up

**Budget**

Below is the proposed budget for the intervention. Outside of the items listed below, we will be using chairs and tables available in Kok Si. Additionally, along with the Kok Si sanitation group, we will be providing lunch for the community. The cost will be split between our two groups. All lunch materials including plates and ingredients are included in the proposed budget. Finally, we will ideally be sharing translators with Kok Si Sanitation group, as they will be requesting two translators for the day.

**Proposed Budget**

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<th>Quantity</th>
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**Anticipated Outcomes**

After the distribution of the educational pamphlets and the presentation of the poster, we expect that Kok Si villagers will better understand the risk factors associated with DM2, the relevance of diet and exercise to DM2, and the importance of seeing their doctor for regular screenings and
check ups. Additionally, we aim to clear up pre-existing misconceptions about DM2 specifically regarding family history and fruit consumption for patients with DM2. We hope that villagers will be left with an understanding of how to eat to prevent DM2: including healthy snack substitutions and appropriate serving sizes for consumption. We expect that villagers will leave with an understanding of how to exercise safely and effectively to reduce one’s risk of developing DM2. We hope that leaving the poster will allow community members to continue to learn and teach others about DM2 and enforce a positive relationship between future CIEE students and the Kok Si community.
References


