

Qualitative Assessment of an Electronic Diabetes Education Tool for Burmese Immigrants

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Abstract

Providing preventative health education to refugee groups presents challenges due to language barriers, limited literacy, educational resources, and time constraints. Purpose: pilot an electronic audio-visual Burmese language diabetes educational tool (BDET) designed for low literacy Burmese speaking patients. Sample and setting: eleven adult Burmese speaking patients at a family practice clinic. Methods and measures: qualitative descriptive design utilizing a semi-structured 10 item survey, delivered via interpreter to obtain participant perceptions and opinions of BDET. Findings: BDET provided novel diabetes information in an acceptable format. Participants perceive diabetes to be a very serious disease, however, perceived personal risk of diabetes and intentions of making lifestyle changes yielded mixed responses. This pilot demonstrates that the BDET is acceptable to Burmese immigrants and serves as an example of an efficient, low-cost method of providing health education in a clinic setting when language and cultural barriers exist.

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There are currently 15.4 million refugees in the World today, less than one percent of the World's refugees are resettled in various countries around the World (United Nations Higher Commissioner for Refugees [UNHCR], 2014). The United States (US) accepts more refugees than any other country in the World, resettling tens of thousands of the most vulnerable refugees annually; approximately 3 million refugees have been settled in the US since 1975 (UNHCR, 2014).

Diabetes affects 9.3% of the United States population, 95% of diabetics suffer from type 2 diabetes (DMII); Diabetes costs an estimated 245 billion dollars annually (American Diabetes Association [ADA], 2014b). Refugees in the US demonstrate higher rates of chronic disease including DMII than does the general US population (Yun, et al., 2012). The longer a refugee resides in the US, the more likely they are to develop DMII (Oza-Frank, Stephenson, & Venkat Narayan, 2011). In addition to higher rates of DMII, ethnic minorities demonstrate higher rates of diabetic complications and mortality than does the rest of the US diabetic population (Lanting, Joung, Mackenbach, Lamberts, & Bootsma, 2005).

Simple lifestyle changes are a major component of diabetes prevention and control and result in reduced acute and chronic complications of the disease (World Health Organization [WHO], 2013). Consuming a healthy diet, maintaining a healthy weight, and exercise are key to preventing DMII and diabetic complications (ADA, 2014a). The American Diabetes Association's Standards of Medical Care in Diabetes -2014 advocates diabetes self-management education as an integral part of caring for patients with diabetes (Haas et al. 2014). Increasing DMII preventative behaviors including increasing physical activity, weight reduction, and dietary changes are among the Healthy People 2020 objectives to combat DMII (U.S.

Department of Health and Human Services, 2013).

Higher rates of lifestyle influenced disease such as DMII present a significant need for preventative health education in the refugee community (Komaric, Bedford, & van Driel, 2012). One of the chief barriers to diabetic self-care was found to be a lack of knowledge about the disease and self-care activities (Aloha & Groop, 2013).

Primary care providers are challenged to provide patient education when language, cultural and literacy barriers exist. Farley, Askew, and Kay (2014) identify communication as the most significant barrier to providing primary care services to refugee populations. Health care providers must rely on interpreters to overcome language barriers during an office visit. Utilizing interpreters lengthens the time it takes to complete the office visit. Time spent teaching the refugee patient about lifestyle changes is often sacrificed to relay other important information such as the correct administration of medications.

Web-based resources are available to assist healthcare providers in their efforts to provide health education to patients who do not speak English. Several websites exist containing resources for patient teaching on a variety of topics and languages. Many of the resources are in pamphlet form; fewer are available in an audiovisual format. A search of well known multilingual patient education sites including Medline Plus, Ethnomed, and Healthy Roads Media reveals documents and videos in multiple languages and health topics. The most extensive of these websites, HealthReach formerly known as Refugee Health Information Network (RHIN), has a list of resources in nearly 100 languages, covering an extensive list of health-related subjects. However, health topics are limited in many refugee languages. Only five documents pertaining to DMII education in the Burmese language were located in a search of

these websites. None of the Burmese language diabetes education documents were available in audiovisual format, limiting their use in the presence of a literacy barrier.

These websites must be searched in the English language and require access to technology that may limit independent access to these educational items by refugees. Lack of literacy also limits the use of written material for patient education. Providing access to educational materials in an audio-visual format in the patient's language during an office visit may be a solution to these limitations. The average office wait time to be seen in primary care in the US is 26 minutes (Ly & Glied, 2013). This time could be utilized to provide educational opportunities to patients using materials available in an electronic format.

Use of Computerized Education in an Office Setting

The use of computer-based patient education in a healthcare setting has been investigated. A systematic review of 11 randomized control trials found that the use of electronic format educational tools in patient care settings may be effective in changing patient behaviors and improving clinical outcomes (McDermott & While, 2013). The use of computer-based multimedia diabetes educational materials for low literacy diabetic patients in clinic waiting rooms was investigated by Khan et al. (2011) and Gerber et al. (2005). The use of these computer-based tools correlated positively with an intensification of diabetes therapy but did not improve lifestyle behaviors (Khan et al. 2011). Gerber et al. (2005) found the use of an electronic diabetes education tool increased perceived susceptibility to diabetes in low health literacy participants, but was ineffective in improving physiologic parameters such as glycosylated hemoglobin (A1c) levels and blood pressure. In pilot study involving underserved English and Spanish speaking patients Zyskind, Jones, Pomerantz, and LaFaye Barker (2009), utilized electronic diabetes education materials on MedlinePlus in an office setting and compared it to

usual diabetic care. They found that patients provided with MedlinePlus diabetic instruction demonstrated slightly lower hemoglobin A1c and low-density lipoprotein levels when compared to the patients in the control group. These studies illustrate the value of utilizing computerized diabetes education in an outpatient setting.

Population

Burma, now known as Myanmar, is composed of 135 racial/ethnic groups speaking more than 100 different languages (Aye, Aung & Oo, 2014). Over the last several years, Burmese refugees have represented a large percentage of the refugees resettled in the US. In 2013 alone, more than 16,000 refugees from Burma arrived in the US for resettlement, second only in number to refugees from Iran (United States Department of State, 2014). Arizona has received more than 4500 Burmese refugees, the majority of being resettled in the Phoenix area (Arizona Department of Health Services [ADHS], 2014). The majority of Burmese refugees in Arizona report Burmese as their primary language and the average age at the time of resettlement is 26 (ADHS, 2014).

Burmese refugees have been in a protracted refugee situation since 1984; many have been living in refugee camps for more than one generation. In these camps, they have had limited opportunities for education (Oh, 2010). One study found that only 51% of women in refugee camps at the border of Thailand and Burma were able to read (Carrara, Hogan, De Pree, Nosten & McGready, 2011).

The prevalence of DMII in the Yangon region of Burma is 11 %, and the rate is approaching 14% in urban areas of Yangon, surpassing the US rate of 9.3% (Aye, Aung & Oo, 2014). A diet composed mainly of rice, increased access to high fat and carbohydrate foods along with reduced levels of physical activity are thought to contribute to increased rates in urban areas. Specific

rates of DMII are not available for the Burmese refugee groups in the US, but they likely are similar to DMII rates in urban areas of Burma due to similar diet and exercise patterns associated with urban living. Increased risk of DMII occurs at a lower body mass (BMI) index in Southeast Asian groups such as the Burmese (WHO, 2004).

Problem

There is a need for DMII education in the Burmese refugee population (Arscott et al., 2010). Healthcare providers have limited diabetes education resources for low literacy Burmese speaking patients.

Setting

This pilot was conducted in a family practice clinic which provides primary care services for 8000 patients, many of them refugees. Approximately 800 of the clinic patients report Burmese as their preferred language. The clinic employs interpreters for 12 languages, three that interpret the Burmese language.

Educational Tool Development

A Burmese language diabetes educational tool (BDET) was developed in a voice over digital slide presentation to address diabetes awareness for Burmese speaking patients. The tool is based on the American Diabetes Association's (2014a) diet and activity recommendations for DMII and influenced by the common-sense model (CSM) of self-regulation of health and illness. The CSM seeks to present patients with facts about the disease etiology, symptoms and, outcomes. The information is meant to facilitate interpretation of symptoms and adjustment of behaviors to prevent or control the disease (McAndrew, et al., 2008).

The BDET was developed with the assistance of an informant from the local Burmese refugee community who is employed at the clinic as a medical translator. Images utilized in the BDET

included illustrations and photos depicting images of people displaying symptoms such as fatigue and thirst, potential outcomes such as amputation and dialysis, healthy and poor food choices and exercise. The community informant assisted in the selection of culturally appropriate examples and images. Prior to translation the script was reviewed by the Burmese community informant and edited to improve cultural relevance. The BDET script was then translated into the Burmese language by a certified Burmese translator and then recorded by a Burmese language interpreter.

To facilitate translation and clarity, the script for the BDET was composed at a 6th grade Flesch-Kincaid Grade level. The National Institute of Health (2013) advises that health education materials be composed at a 6th or 7th grade reading level for audiences that have difficulty reading or understanding materials due to factors including language and cultural barriers. Prior to piloting the intervention the BDET was reviewed by the clinic physicians, providers, and medically trained interpreters and approved prior to use. The BDET was then downloaded onto several laptop computers and placed in an easily identifiable location on the computer desktop.

Method

Pilot Design

Exploratory, descriptive qualitative design utilizing a semi-structured survey was utilized to obtain participant perceptions of diabetes risk, intentions of making lifestyle changes and, opinions of the BDET and delivery method. Survey data was collected by interview, through an interpreter immediately following participant viewing of the BDET.

Sample

The subjects of this investigation were a purposeful sample of Burmese speaking patients seeking care at a family practice clinic in Phoenix, Arizona. Criteria for inclusion in the study

included patient self-identification of Burmese as their preferred language, age 18 or older demonstrating a body mass index (BMI) of 23 or greater. A total of 13 participants met criteria for inclusion. Eleven agreed to participate in the study, five men and six women.

Informed Consent

The Burmese refugee diabetes education project was approved by the Northern Arizona Investigational Review Board (IRB). An informed consent was approved by the IRB and then translated into the Burmese language by a certified translator. Interpreters were supervised by the principal investigator (PI) during consent procedures and read the consent to the participants in the Burmese language prior to obtaining signatures.

Data Collection

Prior to beginning the project, interpreters were provided training and instructed to remain neutral when asking questions and responding to the participants. The survey questions were discussed with the interpreters to clarify the meaning and intent of the survey questions and ensure that the interpreters were comfortable asking the survey questions. Interpreters were instructed to provide verbatim responses to survey questions and avoid summarizing participant responses. Interpreter training was advised by Shimpuku and Norr (2012) to reduce the influence of the interpreter bias in data collection and interpretation.

Patients were screened for inclusion criteria; those that met criteria and agreed to participate were provided with the informed consent. Following the informed consent process the BDET was played in its entirety in the private exam rooms on a laptop computer. The survey interview was conducted immediately after the participant viewed the BDET. The PI read the survey questions and recorded the translated responses in English on the survey form. Informal member

checks were utilized during data collection to clarify participant responses. Questions were rephrased, and participants were encouraged to elaborate when short answers were provided.

The use of member checks is important in validating credibility and confirming the meaning of the participant responses (Krefting, 1991). For example, two participants indicated that they did not believe they were at risk for developing diabetes despite previous responses indicating their intentions to change diet and exercise. When member check was utilized the participants stated that they were not going to develop diabetes because now they were going to change their diet. These participants appeared to have self assessed and concluded that they were at risk and had already decided to make changes in their lifestyle to avoid the development of diabetes. These responses were recorded as a positive perception of person risk of developing diabetes.

Analysis

A descriptive qualitative approach was utilized to analyze the data to determine the perceptions and opinions of the participants related to viewing the BDET. The qualitative data collected from each survey was transposed and coded and then compared to other survey responses to determine patterns, similarities and, differences. To support dependability and confirmability of the findings, triangulation techniques were utilized during data analysis. Burmese language translators present during data collection participated in the data analysis and coding to confirm and clarify meanings as themes were identified and summarized.

Findings

Analysis of survey responses revealed several themes in the survey results. The first theme identified was *New Learning*. Ten of the 11 participants indicated that the diabetes educational material was new to them and that they had received no previous instruction about diabetes. The link of diet to the development of diabetes and the seriousness of the consequences of the disease

were specifically identified as new information by several of the participants. A second major theme identified was *Diabetes is Serious*. All 11 participants reported that they now perceived diabetes to be a very serious disease. Three participants expressed surprise that diabetes could cause damage to the entire body.

Participants were specifically questioned about the length of the DBET, convenience of viewing the DBET in the clinic and, the ease of understanding the BDET. All 11 of the participants indicated that the BDET was Easy to Understand and Convenient, a third major theme. All participants reported that the material length and method of delivery were acceptable. Only one participant suggested improving the material by including a testimonial of Burmese person suffering with diabetes.

The final theme identified was the *Desire for Additional Education*. The participants requested additional presentation on other health related topics. Four participants requested educational presentations about the topic of hypertension; two requested the topic of asthma. Additional information request included the topics of flu prevention, diet and weight loss information, and Ebola virus information.

Participant intentions of making lifestyle changes and perceived personal risk of developing diabetes were mixed. Seven of the 11 participants expressed an intention to change their diet; only 3 indicated an intention to exercise. Lack of time was identified most frequently as a barrier to exercise. Two participants anticipated difficulty changing the amount of rice in their diet and hunger associated with diet changes. Six of the participants indicated that they believed they were at risk of developing diabetes.

Upon completion of the data collection, the two clinic providers present during the trial of the BDET were informally solicited for their opinion of the method of delivery in the clinic setting

and value of the educational material. The providers indicated that the process was moderately disruptive because the office visit was delayed slightly while the clients viewed the BDET and completed interviews. One provider suggested using the BDET after the office visit to minimize disruptions. Both of the providers felt that the material was valuable and necessary.

Discussion

A lack of knowledge about the causes, consequences and treatment of diabetes and other chronic diseases has been identified as a barrier to healthcare in the Burmese refugee population (Arscott et al., 2010). The development and pilot of the DBET attempt to meet this educational need in the Burmese refugee population. The findings of this investigation indicate that the BDET, utilized in a clinic setting is a convenient and understandable method of diabetes education for Burmese speaking refugees. The materials appear to be an effective method of relaying the potential seriousness of diabetes complications and the relationship diet to the development of diabetes. Mixed reports of perceived personal risk of developing diabetes were observed. It is interesting to note that the participants who reported having a family member or friend with diabetes all perceived that they had a risk of developing diabetes.

Intention to exercise was not reported as frequently as intention to make diet changes. Modification of the BDET to more clearly describe the benefits of exercise in reducing diabetes risk may improve patient motivation to exercise. The addition of specific diabetes risk factors related to body mass index and a Burmese diabetic patient testimonial may to the DBET may result in an increased perceived susceptibility of developing DMII.

The patient education method caused moderate disruption of the workflow in the clinic by delaying the office visit. The disruption was likely enhanced by gathering survey data that further extended the length of the office visit. Elimination of survey interviews and the informed

consent procedure will shorten the length of the intervention and likely minimize workflow disruption.

The cost to produce the BDET intervention was minimal. Interpreters volunteered their services for consultation, translation, and recording of the narration. Several laptops with appropriate software were available for use, so no additional cost was incurred for these materials.

The BDET is an example of utilizing available resources to develop and provide health education to clients in the presence of a language barrier. The development of similar electronic audiovisual educational materials could easily be applied to a variety of other patient education topics such as using dental floss, monitoring blood glucose, obtaining medication refills and, explaining clinic policies.

The involvement of community health workers has been found to be effective when working with patient when there is a language barrier (Pottie, Hadi, Chen, Welch &, Hawthorne. 2013). Interpreters from the local Burmese community played an important role in the study from the development of the educational material and survey tool, to the collection and analysis of data. Collaborating with the interpreters from the community to develop interventions that are culturally acceptable to community members has been demonstrated by this intervention.

Limitations

This study was helpful in confirming that the content, format and, delivery of the BDET was acceptable to the Burmese refugee patient population and effective in raising awareness of diabetes. The BDET should be evaluated further for adult learning outcomes to determine efficacy. Outcomes should also be evaluated over time to determine the long-term effects on patient lifestyle behaviors. It is anticipated that additional reinforcement and educational

interventions, counseling and, support will be necessary to promote healthy lifestyle changes in the Burmese immigrant community.

Conclusion

The development of the BDET is an example of utilizing technology to provide patient education in the presence of language and cultural barriers. The BDET pilot demonstrates capitalizing on available resources and opportunities such as clinic wait time to promote health literacy and healthy lifestyle practices in a clinic setting. It also serves as an example of collaborating with community informants and translators to overcome language and cultural barriers to provide health education. This pilot may be replicated and adapted to meet a variety of health educational needs of clients who speak uncommon languages in absence of available educational resources. The use of the audiovisual format alleviates the need for literacy that may be a barrier in some refugee populations. The use of a computer-based educational method is convenient and able to be delivered in a clinical setting when patient education needs become apparent. The intervention reduces manpower necessary to provide the education and interpretation improving efficiency. The BDET was acceptable to the Burmese participants and was effective in raising awareness of diabetes.

References

- Ahola, A. J., & Groop, P. h. (2013). Barriers to self-management of diabetes. *Diabetic Medicine*, 30(4), 413-420. doi:10.1111/dme.12105
- American Diabetes Association [ADA] (2014a). *Living with Diabetes*. Retrieved from, <http://www.diabetes.org/living-with-diabetes>
- American Diabetes Association [ADA] (2014b). *Statistics about Diabetes*. Retrieved from, <http://www.diabetes.org/diabetes-basics/statistics/?loc=db-slabnav>
- Arizona Department of Health Services (2014). Demographics. *Refugee Health Latest Statistics*. Retrieved from, <http://www.azdhs.gov/phs/edc/odis/refugee/statistics/index.php>
- Arcott, T., Costello, B., DiPalma, K., Folkl, A., Malgeri, M., Miller, A.,... Kessler, R. (2010). Identifying barriers to care in the Burmese and Bhutanese refugee populations of Burlington, Vermont. *Public Health Projects, 2008-present*. Book 36. Retrieved from, http://scholarworks.uvm.edu/comphp_gallery/36
- Aye, T., Aung, M., & Oo, E., (2014) Diabetes mellitus in Myanmar: Socio-cultural challenges and strength. *Journal of Social Health and Diabetes* 2(1), 9-13. Retrieved from, <http://www.joshd.net/>
- Carrara, V. I., Hogan, C., De Pree, C., Nosten, F., & McGready, R. (2011). Improved pregnancy outcome in refugees and migrants despite low literacy on the Thai-Burmese border: results of three cross-sectional surveys. *BMC Pregnancy & Childbirth*, 11(1), 45-53. doi:10.1186/1471-2393-11-45
- Farley, R., Askew, D., & Kay, M. (2014). Caring for refugees in general practice: perspectives from the coalface. *Australian Journal of Primary Health*, 20(1), 85-91. doi:10.1071/PY12068

- Gerber, B., Brodsky, I., Lawless, K., Smolin, L., Arozullah, A.,... Eiser, (2005).
Implementation and evaluation of low-literacy diabetes education computer multimedia application. *Diabetes Care*. (28)7, 1574-1580.
- Haas, L., Maryniuk, M., Beck, J., Cox, C., Duker, P., Edwards, L., ... Youssef, G.(2014).
National standards for diabetes self-management education and support. *Diabetes Care* 37(1). s144-s153. doi: 10.2337/dc14-S144
- Khan, M., Shah, S., Grudzien, A., Onyejekwe, N., Banskota. P., Karim S.,... Gerber. B. (2011).
A diabetes education multimedia program in the waiting room setting. *Diabetes Therapy*, 2(3), 178-188. doi: 10.1007/s13300-011-0007-y
- Komaric, N., Bedford, S., & van Driel, M. (2012). Two sides of the coin: Patient and provider perceptions of health care delivery to patients from culturally and linguistically diverse backgrounds. *BMC Health Services Research*, 12(1) 322-335. doi: 10.1186/1472-6963-12-322
- Krefting, L. (1991). Rigor in qualitative research: the assessment of trustworthiness. *American Journal of Occupational Therapy*, 45(3), 214-222.
- Ly, D. P., & Glied, S. A. (2013). Variations in the Service Quality of Medical Practices. *American Journal of Managed Care*, 19(11), e378-e385. Retrieved from. <http://www.ajmc.com/publications/issue/2013/2013-1-vol19-n11/variations-in-the-service-quality-of-medical-practices/3>
- McAndrew, L., Musumeci-Szabó, T., Mora, P., Vileikyte, L., Burns, E., Halm, E., & ... Leventhal, H. (2008). Using the common sense model to design interventions for the prevention and management of chronic illness threats: from description to process. *British*

Journal of Health Psychology, 13(Pt 2), 195-204.

- McDermott, M. S., & While, A. E. (2013). Maximizing the healthcare environment: A systematic review exploring the potential of computer technology to promote self-management of chronic illness in healthcare settings. *Patient Education and Counseling*, 92, 13-22. doi: 10.1016/j.pec.2013.02.014
- National Institute of Health, National Library of Medicine. (2013). How to write easy-to-read health materials. *MedlinePlus*. Retrieved from, <http://www.nlm.nih.gov/medlineplus/etr.html>
- Oh, S., (2010). Education in refugee camps in Thailand: Policy, practice and paucity. *Education for All Global Monitoring Report 2010*. Retrieved from, <http://unesdoc.unesco.org/images/0019/001907/190709e.pdf>
- Oza-Frank, R., Stephenson, R., & Venkat Narayan, K. (2011). Diabetes prevalence by length of residence among us immigrants. *Journal of Immigrant & Minority Health*, 13(1), 1-8. doi:10.1007/s10903-009-9283-2
- Pottie, K., Hadi, A., Chen, J., Welch, V., & Hawthorne, K. (2013). Realist review to understand the efficacy of culturally appropriate diabetes education programs. *Diabetic Medicine*, 30(9), 1017-1025. doi:10.1111/dme.12188
- Shimpuku, Y., & Norr, K. F. (2012). Working with interpreters in cross-cultural qualitative research in the context of a developing country: systematic literature review. *Journal of Advanced Nursing*, 68(8), 1692-1706. doi:10.1111/j.1365-2648.2012.05951.x
- United States Department of Health and Human Services. (2013). Healthy People 2020: Health communication and health information technology. Retrieved from, <http://www.healthypeople.gov/2020/default.aspx>

The United Nations Higher Commissioner for Refugees (2014) *Figures at a glance*.

Retrieved from, <http://www.unhcr.org/pages/49c3646c11.html>

The United States Department of State. (2014). *Refugee Admissions*. Retrieved from,

<http://www.state.gov/j/prm/ra/index.htm>

World Health Organization [WHO] (2004). Expert consultation: Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *The Lancet*, 363(9403), 157-163.

World Health Organization [WHO] (2013). *Diabetes fact sheet*. Retrieved from,

<http://www.who.int/mediacentre/factsheets/fs312/en/>

Yun, K., Hebrank, K., Graber, L., Sullivan, M., Chen, I., & Gupta, J. (2012) High

prevalence of chronic non-communicable conditions among adult refugees:

Implications for practice and policy. *Journal of Community Health*, 37:1110– 1118.

doi: 10.1007/s10900-012-9552-1

Zyskind, A., Jones, K., Pomerantz, K., & LaFaye Barker, A. (2009). Exploring the use of computer based patient education resources to enable diabetic patients from underserved populations to self-manage their disease. *Information Services & Use*, 29(1), 29-43.

doi:10.3233/ISU-2009-0592