**INTRODUCTION**

Tobacco use is the leading contributor to preventable disease and death in the United States (US) accounting for one in every five deaths (CDC, 2016). In recent years, we have seen a decrease in tobacco usage within the general population, however, significant disparities still exist among underserved and marginalized populations (CDC, 2016). One of the most prominent disparities can be seen by geographic location. The highest rates of tobacco usage are in the Midwestern (18.7%) and Southern (15.3%) parts of the USs and in rural communities (CDC, 2016; NSDUH, 2015). Within these geographical areas, cigarette smoking is the most common form of tobacco use (CDC, 2016).

As the largest state in the Midwestern and Southern US, Texas has smoking rates that range from 12% to 20% by county (Community Commons, 2016). The highest rates of tobacco use occur in 13 counties, which have smoking rates of 19% or higher (Community Commons, 2016). The majority (9 of 13) of these counties have populations of 50,000 people or less (Community Commons, 2016). Many factors influence higher smoking rates including lack of smoke-free policies, culture, education level, income, and access to healthcare (American Lung Association, 2012; CDC, 2016). However, Texas faces unique barriers in health status and risk behaviors, like smoking, because of its close proximity to the US-Mexico border. Due to its location, immigration from Mexico strongly influences population health status within the state. In 2014, 22% of the total number of immigrants from Mexico moved to Texas, which was second only to California (37%) (Zong and Batalova, 2016). Among first generation Mexican American immigrants, smoking rates are estimated to be higher, specifically with men, which range upwards of 30% of the population (Reiss, Lehnhardt, and Razum, 2015).

In past studies, research found that the “Hispanic Paradox” indicated that immigrants from Mexico to the US have positive health outcomes, despite low socioeconomic status, lack of access to health care, lower education levels, and high poverty rates, which is counterintuitive to what we might expect (Franzini and Fernandez-Esquer, 2004). However, research on substance abuse, specifically tobacco usage among Mexican immigrants does not fit in with this phenomena (Reiss, Lehnhardt, and Razum, 2015). To address this disparity, researchers at Texas A&M University (TAMU) began searching for culturally tailored strategies that could be used among this unique target population to address smoking rates. One approach, which has been successfully used in the past to address diabetes among Mexican immigrants are community health workers (CHWs) (Thompson, Horton, and Flores, 2007).

**Community Health Workers**

When addressing health disparities, CHWs are an excellent resource for disseminating education amongst the identified population. CHWs are the face of the public health in the communities they serve (APHA, 2017). They are trusted members of a target population and are able to act as liaisons between patients and the health and social service providers within a community (APHA, 2017). CHWs are able to build individual and community capacity by increasing knowledge and changing health behavior through outreach, community education, informal counseling, social support, and advocacy (APHA, 2017). In the past, CHWs have successfully addressed issues such as maternal and child health, infectious disease, and diabetes (Lewin et al. 2010; Thompson, Horton, and Flores, 2007). Due to their widespread successes and ability to reach traditionally marginalized populations, CHWs have become a common fixture in communities across the country (Lewin et al., 2010).

***CHW Training***

In recent years, great deal of work has been conducted to understand, and package the training and skills needed by CHWs to meet the needs of their patients. As a result, there are training centers across the country dedicated to equipping this new public health work force (Kashm May, and Tai-Seale, 2007). While these programs vary by state, training mechanisms are becoming a frequently endorsed certification and are supported by national organizations like the American Public Health Association (APHA, 2017). Currently in Texas, the Department of State Health Services CHW/Promotora Training and Certification Program oversees two forms of certification for CHWs. The first method of certification requires CHWs to take a 160-hour certified training course, and the second method of certification requires 1000 documented hours of experience as a CHW. Both forms of certification attest that CHWs have mastered the eight recognized core competencies: teaching; communication; advocacy; service coordination; interpersonal skills; capacity building; organizational skills; and knowledge base. Once certified, CHWs are required to complete 20 total hours of continuing education units every two years in order to maintain their certification.

***CHW Tobacco Focused Continuing Education Unit***

Currently, there are limited tobacco cessation resources for CHWs and there are no formal training mechanisms that contribute to their certification. A clinical resource, “*Ask, Advise, Refer*”, is available for medical providers; however, it does not necessarily reach Texans most at risk for poor tobacco-related health outcomes, specifically first generation immigrants. The reason for the poor reach included clinical providers’ lack of time to discuss tobacco cessation in patient appointments and the patients had limited access the healthcare system. In an effort to effectively disseminate tobacco cessation education program to those most at risk, the Texas Department of State Health Services (DSHS) Tobacco Prevention & Control Branch and the Texas Comprehensive Cancer Control Program (TCCCP) approached TAMU about creating a tobacco cessation training for CHWs to combat tobacco dependence and promote tobacco cessation to underserved, at-risk communities across the state.

The goal of the tobacco-focused continuing education unit was to provide CHWs with the knowledge and skill sets needed to inform their communities about tobacco prevalence, health risks, traditional and emerging tobacco products, benefits of quitting, best practices for treating tobacco dependence, and available resources for quitting. This article describes the adaptation and development process, as well as preliminary implementation outcomes from the curriculum.

**METHODS**

To develop the curriculum, the National Community Health Worker Training Center (NCHWTC) at TAMU used its typical curriculum development process. The process includes 1) assessing the need for community education in special health topics; 2) consulting with community members and community liaisons about existing knowledge and topics they are interested in learning about; 3) generating the curriculum content based on community input; 4) formatting the presentations and activities based on language, culture, and existing knowledge of the intended audiences; and 5) submitting the curriculum content and materials for accreditation as certified continuing education (CEU) training for CHWs.

***Curriculum Development using a Participatory Approach***

To begin the tobacco cessation curriculum development, a team of six NCHWTC CHWs and CHW-Instructors began by reviewing the existing *Ask, Advise, Refer* clinical curriculum. As part of the review process, the team's knowledge of and connections with the communities they serve enabled them to seek supplementary resources from local tobacco control coalitions, American Cancer Society chapters, government agencies, and other community-based educators. By drawing from local sources, the developers were able to ensure the added content was relevant and culturally appropriate. The team also identified additional resources and training materials from reputable online tobacco health sources, such as journal publications, the Centers for Disease Control and Prevention, the National Cancer Institute, the American Lung Association, and state resources for tobacco-free initiatives.

Curriculum developed without CHW involvement runs the risk of missing an integral part of translation. Therefore, the NCHWTC used firsthand knowledge from CHWs to adapt the curriculum from a clinical provider perspective to a CHW perspective. This specifically allowed the CHWs to adapt information so it was culturally competent and at an appropriate comprehension level. For example, the development team members were able to repackage clinical tobacco cessation information for the CHWs use by utilizing images, videos, and interactive activities. Maintaining the integrity of the content and translating the style and format of educational presentations are difficult tasks for clinical provider, but CHWs are uniquely qualified to negotiate the differences between clinical and community settings. Finally, to ensure that the curriculum was presented in an appropriate level for readability and comprehension, the CHW curriculum developers used the Flesch Reading Ease and the Flesch-Kincaid Grade Level tools available in Microsoft Office©. To ensure that the health education concepts can be clearly communicated to the CHWs and the community members with various health level proficiency, the NCHWTC produces curriculum materials at a middle-school grade reading level or below (Hawkins, Kreuter, Resnicow, Fishbein, & Dijkstra, 2008).

To ensure the curriculum was culturally appropriate for CHWs and their community members, the NCHWTC curriculum developers used a series of evidential, sociocultural, linguistic, and constituent-involving strategies (Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2003). Evidential strategies included highlighting evidence-based information about the health topic, such as statistical data, to illustrate the severity or impact of the health issue. Sociocultural strategies included recognizing and integrating CHWs’ cultural values, attitudes, and beliefs into the curriculum content and presentation formats. Linguistic strategies included accommodating the CHWs’ learning and communication styles by creating bilingual Spanish and English curricula available for face-to-face or online delivery. These constituent-involving strategies allowed the NCHWTC CHWs and Community Health Worker Instructors (CHWIs) to consult with community members and liaisons in the development of the curriculum.

***Curriculum Format***

The curriculum, “*Tobacco Cessation: The Key to a Healthier You!*” CHW Continuing Education Unit (CEU), was designed to be a 4-DSHS certified CEU. The primary aim for the continuing educational program is to prepare CHWs to educate their community members about tobacco prevalence, the health risks of tobacco use, traditional and emerging tobacco products, benefits of quitting smoking, best practices for treating tobacco dependence, available resources for quitting smoking, and the U.S. Public Health Services’ *Ask-Revise-Refer* model. These aims were jointly determined by the DSHS team, the NCHWTC CHWs and CHWIs, community input, and the content of the original clinical provider training.

The packaged curriculum included lesson plans, PowerPoint presentations, and handouts from reputable online health sources. Assessment materials were pre- and post-tests that gathered information on how the course improved CHW comprehension of tobacco cessation education and outreach. Additionally, evaluation forms provide demographic information of the CHWs who took the training as well as their feedback about the training. For examples, after the CHW completed the training, they were asked; “What components of the training did they find beneficial in their learning process?”; and “If the training prepared the CHWs to provide more culturally competent and evidence-based tobacco cessation information to the community?”. Finally, the curriculum content and materials – lesson plans, presentations, handouts, pre- and post-tests, and evaluations – were translated into English and Spanish.

**Curriculum Certification and Implementation**

Once the curriculum's content was finalized, the draft presentations, handouts, lesson plans, and assessment forms were submitted for review and approval to the Texas DSHS Promotor(a) or Community Health Worker Training and Certification Program. The DSHS CHW Program staff and content experts reviewed the curriculum and requested revisions. The NCHWTC’s training center staff received revision requests less than 3 weeks after the initial submission. The curriculum development team incorporated the required updates into the presentation content and other materials, and re-submitted for approval within two weeks. Once DSHS verified that revisions were made, an Approval Memo dated May 2016 was documented for certification of the curriculum as a Continuing Education Unit (CEU) for CHWs.

Following DSHS certification, the NCHWTC implemented the curriculum with a small group of CHWs to assess if any minor modifications were needed in the curriculum content prior to full dissemination of the training (Doody & Doody, 2015). During this preliminary implementation, the CHWs confirmed that they were able to comprehend the training material, as well as assessed the curriculum materials’ readability level and language (Koskan, Friedman, Brandt, Walsemann, & Messias, 2013). The certified Tobacco Cessation curriculum was delivered in-person to 13 CHWs in South Texas in July 2016. The CHW-Instructors who hosted the training, conducted a brief evaluation to elicit feedback on the training from the CWHs. Simultaneously, the online version of the curriculum was recorded and posted using the NCHWTC’s online learning management system. The online curriculum was delivered to a 5 CHWs selected at random. The CHWs who participated in the online curriculum emailed their feedback on the training content and presentation to the curriculum development team. The in-person and online modules went through a process of revisions based on the preliminary implementation. The training modules were finalized and available for wide dissemination by November 2016, approximately six months after the development process began. By the CHWs participating in this training, it created an additional professional development opportunity for CHWs.

**RESULTS**

***Curriculum Development Approach and Format***

The participatory approach to CHW curriculum development offered two primary lessons for future projects. First, engaging CHWs from the beginning stages of the project increased the likelihood that the final curriculum was culturally appropriate, effectively targeted, and relevant to the CHWs’ training needs. Second, preparing curricula in a range of formats increased the potential reach of the training and its content. The adaptation of an existing, English-language curriculum for clinical providers produced a CHW curriculum available in four formats: face-to face in English and Spanish, and self-paced, online in English and Spanish. Having two delivery languages and channels met the needs of the CHW workforce as well as the communities they serve; all of which are in need of tobacco cessation education and outreach. The variety of options to access the training modules also makes it more likely that a larger number of CHWs will participate in the training.

Based on the curriculum development experience for the tobacco cessation training, the project team feels strongly that the process can be a model for supplementary CHW curriculum development projects on other important health topics. Additionally, this holistic, inclusive curriculum development process could represent a model for other tobacco cessation projects struggling to reach and/or engage vulnerable populations. Involving representatives of the priority populations in the development of training responsive to their unique needs is sound practice.

***Curriculum for CHWs vs Medical Provider Training***

Crucial differences exist in curriculum development for CHWs and for other clinical providers. Specifically, CHW training has a long history of incorporating Adult Learning principles and Popular Education techniques (Wiggins, 2011). These interactive, dynamic trainings encourage participants to share their experiences with each other and develop their own capacity to implement community-based education. CHW training also prioritizes examination of health equity and social justice issues, often bringing an advocacy lens to community education sessions. For the Tobacco Cessation CHW curriculum, the incorporation of group discussions, hands-on activities, scenario-based role plays, and other interactive teaching methods represented a significant departure from the original clinical curriculum.

Moreover, CHW training materials generally rely less on peer-reviewed literature than other forms of easily accessible and reputable source material. Though information from scientific research and manuscripts may be consulted and incorporated into the curriculum content in the initial stages of development, the final CHW presentation materials often feature open-source, evidence-based resources available via YouTube and/or websites for the Centers for Disease Control & Prevention, the Department of State Health Services, the American Cancer Society, and other agencies. CHWs access these videos, handouts, and other materials in their home communities, without the need for academic databases or journal subscriptions. In the Tobacco Cessation CHW curriculum, this ensures that CHWs are able to revisit the content on their smartphones, in their public libraries, or in their homes, and share the information with community members directly.

***Implementation Outcomes***

Starting in November 2016, the Tobacco Cessation CEU was implemented via online and in-person trainings. Four in-person trainings took place in November at Alamo, Brownsville, Bryan and Dallas, Texas, and the online training was available in December 2016. A total of 107 individuals attended the in-person trainings and 24 individuals completed the online training. Evaluation information was collected using a feedback form. Three theme emerged based on the feedback from the CHWs who participated in the in-person trainings and the implementation of program: informative, relevant, and interactive.

1. *Informative*. CHWs felt more prepared to share the information and resources available for tobacco cessation and prevention in their communities. According to a Dallas participant, the training was professional, informative, and educational.
2. *Relevant*. CHWs across all sites indicated that the tobacco prevention and cessation information was relevant to the communities they serve. Additionally, CHWs reported that this training met a community need for anti-tobacco efforts and education. In the evaluation form, CHWs responded that they felt the tobacco cessation content was important, relevant, and useful.
3. *Interactive*. CHWs stated that the visual and interactive models, such as videos and group activities were a useful component of their learning experiences.

**DISCUSSION** This manuscript provides an overview of a newly developed tobacco cessation curriculum designed for CHWs. The curriculum meets a significant need, specifically in Texas, that helps disseminate cessation strategies through peer-lead, culturally relevant messages. However, the applicability of this curriculum extends beyond Texas to other communities experiencing disparities in tobacco use and related health outcomes. This curriculum can be used by CHWs across the country to increase their knowledge and skills needed to address smoking behaviors with their clients.

As with other CHW-led work, the unique ability to reduce risk behavior, while building capacity is an important implication of this project. CHWs build relationships, that are based on trust, with their target population and as a result are changing social structures within communities. The social support aspect of their work is a crucial part of their ability to be successful in meeting the needs of their patients (Heaney, C. A., & Israel, B. A., 2008). In addition, CHWs are able to engage populations that are traditionally left out of decision making within communities. By acting as a liaison between their target population and the social and healthcare providers in a community, they are giving their patients a voice (Heaney, C. A., & Israel, B. A., 2008). These are important aspects of capacity building that CHWs are uniquely qualified to address.

The use of tobacco cessation training among CHWs seems like an obvious concept, but prior to this project, limited resources were available. By creating tobacco-focused content, the NCHWTC created a way that CHWs could engage their target population in smoking cessation activities, while simultaneously addressing other health needs. Oftentimes, CHWs are charged with addressing one particular health issue, like diabetes, based on funding requirements. However, the CHW approach is always holistic in nature because they may be the only healthcare workers that vulnerable community members encounter. Without CHWs’ culturally appropriate expertise and guidance, these individuals would go unserved. By combining tobacco cessation with other forms of CHW outreach directed at particular morbidities, we are able to not only improve patient health but also reduce risks for future health problems. Tobacco cessation is a natural and simple topic that can be integrated into many different discussions about health issues (US Department of Health and Human Services, 2006).

**Next Steps**

While this project is bridging a gap in health education needed by the public health workforce, there is still important work to be done. Currently, the CHW curriculum on smoking cessation is in the form of a CEU. The CEU was selected because of its ease of implementation and short duration. These factors will encourage a quicker uptake of the training among existing CHWs. However, in the future, the NCHWTC is working to embed tobacco cessation content into their formal CHW certification, which is 160 hours, and approved by the Texas Department of State Health Services. By embedding this content into the overall CHW certification, the NCHWTC will be able to equip new CHWs and CHW-Instructors with the skills and information needed to address tobacco use, while focusing on other health topics. Because tobacco use is a contributor to many different morbidities, it is essential to cover in all health visits (US Department of Health and Human Services, 2006).

In addition, this manuscript only provides an overview of the curriculum development, content, and preliminary results. Pilot testing is still needed to speak to the specific knowledge gains among CHWs and how their training translates into the field. Testing implementation of CHW work is an important aspect of further supporting their relevance in the changing culture of health in the US.

**References:**

American Lung Association (2012). *Disparities in Lung Health Series: Cutting Tobacco’s Rural Roots: Tobacco Use in Rural Communities*

American Public Health Association (2017). *Community Health Workers*. Retrieved from: https://www.apha.org/apha-communities/member-sections/community-health-workers

Centers for Disease Control and Prevention (2016)*. Cigarette Smoking Among Adults—United States, 2005–2015*. Morbidity and Mortality Weekly Report 2016;65(44):1205–1

Centers for Disease Control and Prevention. (2015). *Smoking and Tobacco Use Fact Sheet*.

Centers for Disease Control and Prevention. (2016). *Tobacco Use by Geographic Region*

Colby SL, Ortman JM (2016). *Projections of the Size and Composition of the U.S. Population: 2014–2060* [PDF–1.16 MB]. Washington DC: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau

Community Commons (2016). *Adult smoking map, rank by county*.

Doody, O., & Doody, C. M. (2015). Conducting a pilot study: case study of a novice researcher. British Journal of Nursing, 24(21), 1074-1078. doi:10.12968/bjon.2015.24.21.1074

Franzini, L., Fernandez-Esquer, M.E. (2004). *Socioeconomic, cultural and personal influences on health outcomes in low income Mexican-origin individuals in Texas*. Social Science & Medicine 59(8) pg: 1629-1649

Healthy People 2020 (2010). *Disparities*. Retrieved from: <https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities>

Heaney, C. A., & Israel, B. A. (2008). Social networks and social support. *Health behavior and health education: Theory, research, and practice*, *4*, 189-210.

Kash, B.A., May, M.L., Tai-Seale, M. (2007) *Community health worker training and certification programs in the United States: findings from a national survey*. Health Policy 80(1). pgs: 32-42

Koskan, A. M., Friedman, D. B., Brandt, H. M., Walsemann, K. M., & Messias, D. H. (2013). Preparing promotoras to deliver health programs for hispanic communities: Training processes and curricula. Health Promotion Practice, 14(3), 390-399. doi:10.1177/1524839912457176

Kreuter, M., Lukwago, S., Bucholtz, D., Clark, E., & Sanders-Thompson, V. (2002). Achieving cultural appropriateness in health promotion programs: Targeted and tailored approaches. Health Education & Behavior, 30(2), 133-146.

Lewin, S., Munabi-Babigumira, S., Glenton, C., Daniels, K., Bosch-Capblanch, X., E van Wyk, B., Odgaard-Jensen, J., Johansen, M., Aja, G., Zwarenstien, M., Scheel, I. (2010*). Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases*. Cochrane Database of Systematic Reviews. Issue 3. Doi: 10.1002/14651858.CD004015.pub3

Reiss, K., Lehnhardt, J., Razum, O. (2015*). Factors associated with smoking in immigrants from non-western to western countries- what role does acculturation play? A systematic review*. Tobacco Induced Diseases, 13 (11) doi: 10.1186/s12971-015-0036-9

Substance Abuse and Mental Health Services Administration (2014). Results from the 2014 *National Health Survey on Drug Use and Health: Detailed Tables.*

Thompson, JR., Horton, C., Flores, C. (2007). *Advancing diabetes self-management in the Mexican American population a community health worker model in a primary care setting*. The Diabetes Educator 33(6).

United States Census Bureau (2015). *Quick Facts: United States and Texas.* Retrieved from: <http://www.census.gov/quickfacts/table/PST045216/00,48>

US Department of Health and Human Services. (2006). *The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 709

Vidrine JI, Shete S, Cao Y, Greisinger A, Harmonson P, Sharp B, Miles L, Zbikowski SM, Wetter DW. (2013) *Ask-Advise-Connect: a new approach to smoking treatment delivery in health care settings*. JAMA Intern Med*.* 2013;173(6):458-464. doi:10.1001/jamainternmed.2013.3751

Zong, J., Batalova, J. (2016) *Frequently requested statistics on immigrants and immigration in the United States*. Migration Policy Institute