In This Issue

President’s Message 2
Commissioner’s Comments - Ready and Able 2
Snakes at a Barbecue: Snake Bites During Holidays 3
Assessing Barriers to Healthcare Access Among Refugees Living in San Antonio, Texas 5
Follow-up Commentary: Translating Research into Action – The San Antonio Refugee Health Clinic 9
Empowering Health Promotion Students on the Texas-Mexico Border Through Digital Storytelling: Implications for Public Health in Vulnerable Communities 11
Multi-jurisdictional Norovirus Outbreak at a Swimming Pool 15
Attitudes Toward Treatment and Potential Barriers to Access of Mental Health Services in a Sample of Elderly Hispanic and Anglo Adults 18
Municipal Bicycle Share Program Users, Uses, and Effects: View from San Antonio, Texas 21
Cyberbullying at a Texas University - A Mixed Methods Approach to Examining Online Aggression 26

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President’s Message

James Swan, Ph.D.

As with any professional association, TPHA must be careful, judicious, and in the case of public health scientific, in deciding on what public positions to take on issues of the day. The American Public Health Association has a long, elaborate process for adopting public positions that includes: submission of proposals with citations of supporting evidence and clear relating of the positions to the evidence, review by public policy committee, hearings at annual meetings allowing critiques, comments and amendments, and a vote by the Governing Council at the annual meeting. Our Texas affiliate does not have the resources for as elaborate a process; but it does have processes for adopting positions. A proposal needs to be developed, citing evidence, for consideration and vote by TPHA Governing Council. Following approval by the Governing Council, the resolutions are then presented to our membership to vote on just prior to the Annual Education Conference. For fast-breaking issues, the Executive Board can adopt an Executive Board Opinion Statement for Governing Council approval and distribution to policy makers. Executive Board Opinion Statements are then developed into official resolutions which follow the procedure outlined above before becoming a standing position of the Association.

These processes came to light recently when the Association was asked whether it had a position on electronic cigarettes. It currently does not. This was discussed in the Governing Council (GC) meeting, considering not only the issue of an official position but also whether it had need of such a position for current and future legislative-agenda consideration. Although many GC members obviously had personal positions with regard to e-cigs, it was obvious that we did not have sufficient evidence to support any position. Some felt that sufficient scientific evidence is lacking about any direct effects of e-cigs on public health (as in second-hand fumes), efficacy of e-cigs in smoking cessation (or possibly addiction to e-cigs), marketing especially to children, and so on. Greater evidence seemed to be available about actual adoption of e-cigs by the public. The decision was therefore made to establish a small working group to consider what evidence does exist on the variety of issues with e-cigs and to develop a white paper on the issue. Once such a document is developed, it can be considered by the Governing Council for a possible interim Executive Board Opinion Statement; should it be considered that an immediate position were necessary. More likely, any decision would be deferred to a vote at the Annual Education Conference.

In short, we may all have strong personal positions on issues important to public health; and we can be concerned that timely interventions should be made by TPHA on public policy issues. But as an association, we must be sure that our official positions are supported by sufficient current scientific evidence and that formal positions are adopted by as thorough a democratic process as practical. It is the responsibility of all of us, your president, the Executive Board, the Governing Council, and the membership as a whole to ensure that we stick to such principles.

From the Editor: Many thanks to our authors for choosing our journal in which to publish their work and to our reviewers for contributing their expertise and time. A special thank you to our members who have answered our calls for submissions and volunteered their time as reviewers. We hope you will continue to stay involved in your association’s publications.

Commissioner’s Comments

Ready and Able

David L. Lakey, M.D.
Commissioner, Texas Department of State Health Services

Research tells us that many people think disasters won’t happen to them. But the reality is, disasters can occur to anyone, anywhere. Texas has more presidentially declared disasters than any other state in the nation. From wildfires to hurricanes, these disasters are responsible for injuries, illnesses, loss of life and billions of dollars in property damage. We need to be ready.

As a state we need to be able to respond to the next disaster. We encourage everyone to have a plan, a grab-and-go kit and prepare...
Snakes At a Barbecue: Snake Bites During Holidays

Mathias B. Forrester1, C. Lizette Villarreal2, Darelle Hinson2
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2South Texas Poison Center, San Antonio, Texas

There are approximately 120 snake species in the US, around 20 of which are venomous. The four major types of poisonous snakes in the US are rattlesnakes, copperheads, cottonmouths, and coral snakes.1 Venomous snake bites can cause serious morbidity and even death. During 2012, 3,469 exposures to these venomous snakes were reported to poison centers nationwide; these included one death.2

All four of the major types of venomous snake, represented by 15 species and subspecies, are endemic to Texas.1,3 Moreover, venomous snake bite rates have been reported to be higher in Texas than in most other states.4 During 2000-2013, 5,684 bites by these venomous snakes, including two deaths, were reported to Texas poison centers.

Snake bites demonstrate temporal trends. In a previous study of snake bites reported to Texas poison centers during a five-year period, venomous snake bites showed a seasonal trend, being highest in July and lowest in January.1 Moreover, analysis of venomous snake bites reported to Texas poison centers during 2000-2013 found the highest proportion of the bites were reported on Saturday (18.2%) and Sunday (16.4%) and the lowest on Tuesday (12.1%). Since venomous snake bites are more likely to occur on the weekend, it might be questioned whether they also are more likely to occur on holidays during the Spring and Summer. There are four major holidays in the Spring and Summer: Easter, Memorial Day, Independence Day, and Labor Day. Three of these (Easter, Memorial Day, Labor Day) occur on the same day of the week, although the date changes from year to year. The fourth (Independence Day) occurs on the same date (July 4) but the day of the week changes from year to year.

Table 1 examines the number of venomous snake bites reported for the three holidays that occur on the same day of the week. The four-day weekend (Friday-Monday) for the holiday was compared to the same four-day period one week prior to and one week after the holiday. The number of venomous snake bites during Easter and Labor Day were not to elevated. However, the number of bites were elevated for Memorial Day, being 32% higher than the number one week before and 34% higher than the number one week after the holiday. Figure 1 presents the daily number of venomous snake bites reported during Memorial Day and Independence Day and 15 days prior to and after the holiday. Again, there was a spike in reported venomous snake bites on Memorial Day (52), being 37% higher than the next highest daily number (38) being reported during the 31-day period. The number of reported venomous snake bites also was elevated on Independence Day; at 39, it was the sixth highest number of venomous snake bites reported for any calendar date. The spike on Independence Day was more modest than that for Memorial Day.

There are several potential explanations for the observed differences between the four holidays. Easter occurs in March or April, when the Texas weather is cooler and snakes may be less active than later in the Spring and Summer. Also, during Easter most people might be taking part in activities that do not place them in potential contact with snakes. In contrast, during the Memorial Day weekend in late May, the weather is warmer, snakes are likely to be more active, and more people might be taking part in outdoor activities. The fact that Independence Day can occur on any day of the week might limit the number of snake bites that occur during the holiday. If July 4 occurs during the middle of the workweek, people might be less likely to partake in activities that place them in the vicinity of snakes. It is less clear why there is no spike in venomous snake bites during the Labor Day weekend in early September; however, it may be that after the long, hot summer, snakes might be less active.

These data suggest that, prior to Spring and Summer holidays, par-
particularly Memorial Day and Independence Day, healthcare and public health providers might want to warn the public to be watchful for venomous snakes. Also, it should be mentioned that poison centers in the US, including Texas, are available 24/7/365 - including all holidays - and can be reached at 1-800-222-1222.

REFERENCES

Table 1. Number of venomous snake bites reported to the Texas Poison Center Network during 2000-2013 for selected time periods around Spring and Summer holidays

<table>
<thead>
<tr>
<th>Four-day period (Friday-Monday)</th>
<th>Cumulative number of snake bites*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easter</td>
<td>89</td>
</tr>
<tr>
<td>One week prior</td>
<td></td>
</tr>
<tr>
<td>Easter</td>
<td>103</td>
</tr>
<tr>
<td>One week after</td>
<td>107</td>
</tr>
<tr>
<td>Memorial Day</td>
<td>114</td>
</tr>
<tr>
<td>One week prior</td>
<td></td>
</tr>
<tr>
<td>Memorial Day</td>
<td>150</td>
</tr>
<tr>
<td>One week after</td>
<td>112</td>
</tr>
<tr>
<td>Labor Day</td>
<td>102</td>
</tr>
<tr>
<td>One week prior</td>
<td></td>
</tr>
<tr>
<td>Labor Day</td>
<td>103</td>
</tr>
<tr>
<td>One week after</td>
<td>91</td>
</tr>
</tbody>
</table>

Venomous snake = snakes native to Texas (rattlesnake, copperhead, cottonmouth, coral snake)
*Total number of snake bites for the same time period each year

Figure 1. Daily number of venomous snake bites reported to the Texas Poison Center Network during 2000-2013 around Memorial Day and Independence Day.

Rattlesnakes, copperheads, cottonmouths, coral snakes
ABSTRACT

Context: Existing research on refugee healthcare access is focused on psychological, emotional and cultural barriers to care. Our research shows that before we can address these internal barriers we must focus interventions on basic structural barriers in a way that specifically targets the needs of individuals from different countries. To impact health seeking behavior, basic structural needs such as communication, financing, and transportation must be met. This needs assessment looked at the differences in barriers to healthcare access faced by refugees from different countries of origin. It also specifies structural barriers that are common among all refugee groups.

Design: Cross-sectional survey

Setting: San Antonio, Texas

Patients/Participants: Over age 18, self-identify as refugee, arrived in US between January 2008 through December 2010. Subjects (n=49) recruited in two subgroups: a) San Antonio Refugee Health Clinic (SARHC) (n=6), b) randomized door-to-door sampling at apartment complexes identified as housing for resettled refugees (n=43).

Intervention/Instrument: 64 question survey tool assessing demographics, financial payment systems, transportation, technology, English fluency, translation services, confidence in healthcare providers, finances, ability to seek healthcare, and impressions of discrimination. Survey sessions conducted in seven languages.

Results: Refugees have trouble accessing healthcare as shown by the fact that 53.2% of refugees do not feel confident scheduling a doctor’s appointment and 41.3% report visiting the ER when they get sick. 24.5% of refugees reported having one or more chronic illnesses, but only 16.7% of those who reported having a chronic illness also reported going to a doctor for check-ups. The major structural barriers to accessing healthcare in this population include language, transportation, and financing. Inadequate English language skill is a major barrier as evidenced by that fact that confidence in scheduling a doctor’s appointment is significantly associated with confidence in speaking and reading English (p=0.001). In this population, 65.3% of refugees reported that they require a translator, while 30.6% use a family member as a translator. Only 34.7% have access to a private motor vehicle and only those without access to a private motor vehicle are more likely to list transportation as a major barrier (p=0.042). Barriers differ by country of origin and age groups within this population. While language is a major barrier for all groups, refugees from Nepal, Bhutan and Burma identified language more than other groups (p=0.026), while adults over the age of 40 were more likely to list language as a major barrier than younger people (p=0.009). Bhutanese and Nepalese refugees were more likely to feel that the quality of their healthcare would improve if they had more money than Burmese refugees (p=0.001).

Conclusion: In order to improve the health of the refugee population in San Antonio, we first must address the major structural barriers to accessing healthcare; language, transportation and financing. Because there are significant differences in experiences within this population, a “one size fits all” approach is not the most effective means to intervene. We believe that an accompaniment program that pairs healthcare professionals and students with refugee families will contextualize the message and learning, while simultaneously addressing both structural and internal barriers to accessing healthcare services in this population.

INTRODUCTION AND BACKGROUND

According to the 2008 World Refugee Survey, there are approximately 14 million refugees and asylum seekers worldwide. Fifteen countries resettle refugees, with the United States resettling the greatest number. In 2007, 48,281 refugees were resettled in the United States (64%), out of 75,300 refugees resettled world-wide. During this time period, Texas resettled 4,401 refugees (9% of those settled in the US). Between 1995 and 2009, approximately 3,500 refugees have been resettled in San Antonio, with nearly half of that population arriving in 2008 and 2009. The countries of origin for refugees resettled in San Antonio include Somalia, Sudan, Yugoslavia, Vietnam, Afghanistan, Iran, Iraq, Burma, and Nepal, with the latter three accounting for the majority of these most recent arrivals.

A large proportion of this population lives in apartment complexes near the South Texas Medical Center in the northwest quadrant of San Antonio. In March of 2010, the San Antonio Refugee Health Clinic (SARHC) was founded as a student-run free clinic by faculty and students from the Schools of Nursing and Medicine at The University of Texas Health Science Center at San Antonio. The goal of this clinic is to provide convenient and basic care to resettled refugees not utilizing available primary care services, while simultaneously integrating this population into the University Health System so that they may receive more comprehensive and consistent access to care. CareLink, which many refugees are eligible for, is a Bexar county health payment plan in which patients pay for their healthcare in monthly installments based on income. It is not an insurance plan, but rather a financial assistance program that offers the indigent population of Bexar county access to medical care through the University Health System. After three months of working with this population it was noted that there were many barriers to receiving continuous, quality primary healthcare in this population.

The majority of refugees immigrate to the United States because of war, violence or persecution. They often arrive with unique requirements for healthcare due to physical and mental abuse in their homeland or during immigration. Refugees with urgent medical conditions and victims of torture or violence are given priority for resettlement. It is therefore expected that refugees would have poorer health status than non-refugee immigrants and US citizens. This is found to be true even after adjusting for socioeconomic and demographic variables. In spite of the greater need for healthcare services, refugees, like other non-citizens, have less access to ambulatory and emergency medical care, and receive less healthcare overall. Furthermore, refugees seek medical care later than other immigrant populations, and are still challenged with these barriers after years of living in the United States.

Refugees are at increased risk for communicable diseases as well as chronic conditions. Refugees have higher rates of chronic pain, and diseases such as arthritis, heart disease, and stroke, than other non-refugee immigrants. According to data from the 2003 New Immigrant Study, one-quarter of uninsured refugees had at least one chronic condition, and more than half of refugees with at least one chronic health condition were uninsured. Additionally, almost half of adult refugees were uninsured when they received legal permanent residency compared to one-fifth of the general US population aged...
18-64 who were uninsured at the time of the study. For adults, being a non-citizen of the US is associated with a 2.5 percent reduction in Medicaid coverage and an 8.5 percent increase in the likelihood of being uninsured compared to US citizens. This is especially surprising considering many refugees are eligible for Medicaid even after they are initially resettled, and reinforces the importance of identifying barriers to healthcare access among the refugee population.

Existing literature on refugee access to healthcare addresses the multiple factors that make it difficult for this population to find and receive adequate care. These include structural barriers such as affordability of care, inadequate interpretation services especially for rare languages and resettlement challenges such as shelter, employment, transportation and food insecurity. These also include barriers of perceived discrimination, cultural differences inequity of care, poor cultural competency on the part of healthcare workers, inadequate community and social support, and mental illness. Female refugees face additional challenges owing to cultural and religious beliefs as well as history of abuse incurred by many women. Gender role concordance between the provider and patient, cultural competency and communication skills are barriers affecting healthcare utilization among this population.

While previous research has been useful in identifying barriers to accessing primary health care in this population, they have generally been limited to specific refugee populations with particular medical illnesses or belief systems. Additionally, much of this research is region specific, often outside the United States where the healthcare system is structurally different. Finally, this literature does little to quantify and prioritize these barriers, so that efforts to eliminate these challenges can be focused and attainable.

METHODS
Introduction
Our study was an exploratory needs assessment that used a cross-sectional survey to assess the most significant barriers to accessing and sustaining use of primary healthcare in this refugee community. The survey tool consisted of 64 questions measuring various barriers through dichotomous (e.g. “yes” or “no”) and modified Likert Scale (e.g. “agree, not sure, disagree”) items. Based upon the authors’ observations volunteering at the SARHC, follow-up home visits, and the above literature review, the following dimensions were included for measurement: demographics (e.g. primary language, region of origin, education), familiarity with financial payment systems like CareLink, access to transportation, English competency, access to translation services, confidence in healthcare providers, awareness of when and how to access appropriate medical services, impact of income on healthcare decisions, perceived discrimination, work schedule, and ability to pay medical bills. We also included two ranking exercises as a simple method for determining what the refugee community considers its primary barrier(s) to healthcare access. All survey responses were self-reported and no identifying information was collected. The study was IRB exempt.

Eligibility
The study population included the community of resettled refugees over 18 years of age living in the Northwest area of San Antonio who arrived to the United States between January 1st, 2008 and December 31st, 2010.

Sampling Methods
A total of 49 participants were sampled from two populations. 6 subjects were sampled from a convenience sample of patients over the age of 18 who seek care at the SARHC. 43 subjects were recruited using door-to-door random sampling at four local apartment complexes near the South Texas Medical Center. Participants were recruited from these two populations because together they represent the resettled refugee population in Northwest San Antonio that may not be using a primary care provider. SARHC is a student run free clinic that is not a substitute for standard primary care. Data were collected over a 2 month period between January and February of 2012.

Data Collection
We accommodated the following language preferences: Farsi, Arabic, Nepali, Karen, Swahili, French, and English. The research team, along with trained translators, explained the survey instructions and guided the participants in each group through the survey section by section using a script. Our survey tool was translated into the seven languages stated above by native speakers.

Analysis
Data was entered and analyzed using IBM SPSS. T-tests and chi-squared tests were performed to identify the three major barriers to health access and the factors that influence these barriers. Age groups were identified as 18 to 25, 26 to 39, 40 to 50, and over 51 years old based on the distribution of the data. The variable ‘country of origination’ was recoded into ‘Country Clusters’ with three categories (Burundi, Congo, Cameroon; Iraq, Iran; and Bhutan, Nepal, Burma) to allow for analyses by geographic region. Nepali and Bhutanese refugees were analyzed together because resettled refugees from Nepal are originally from Bhutan and thus this group often self-identifies as either Nepali or Bhutanese. The Central African cluster and the Sri Lankan participant were not included in results describing region of origin due to the small sample sizes.

RESULTS
The study population was comprised of 49 refugees and the study demographics are presented in Table 1. There were 23 males and 26 females, with an average age of 36 years. All participants had been living in the US between one to four years. Participants were from a wide range of countries including Bhutan or Nepal (20), Burma (11), and the USA (2). There were 58% women and 42% men. There were 57% unemployed and 43% employed. All participants were over 18 with a range of 18-64.

Table 1. Patient Characteristics (N=49)

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>23</td>
<td>46.9</td>
</tr>
<tr>
<td>Women</td>
<td>26</td>
<td>53.1</td>
</tr>
<tr>
<td>Average Age (range)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36.1 years (18-62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Time in US (range)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.4 months (12-48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region of Origin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burundi, Congo, Cameroon</td>
<td>5</td>
<td>10.4</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>Iraq, Iran</td>
<td>11</td>
<td>22.9</td>
</tr>
<tr>
<td>Bhutan, Nepal</td>
<td>20</td>
<td>41.7</td>
</tr>
<tr>
<td>Burma</td>
<td>11</td>
<td>22.9</td>
</tr>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>15</td>
<td>32.6</td>
</tr>
<tr>
<td>1st-8th</td>
<td>11</td>
<td>23.9</td>
</tr>
<tr>
<td>9th-12th</td>
<td>23</td>
<td>47.9</td>
</tr>
<tr>
<td>Any college</td>
<td>8</td>
<td>17.4</td>
</tr>
<tr>
<td>Number of Children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>11</td>
<td>22.9</td>
</tr>
<tr>
<td>1-2</td>
<td>9</td>
<td>18.8</td>
</tr>
<tr>
<td>3-5</td>
<td>18</td>
<td>37.5</td>
</tr>
<tr>
<td>6+</td>
<td>10</td>
<td>20.8</td>
</tr>
<tr>
<td>Unemployed</td>
<td>21</td>
<td>47.7</td>
</tr>
<tr>
<td>Language Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>31</td>
<td>63.3</td>
</tr>
<tr>
<td>Speaks and read English</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>Own a cell phone</td>
<td>28</td>
<td>79.2</td>
</tr>
<tr>
<td>Has internet access</td>
<td>25</td>
<td>55.6</td>
</tr>
</tbody>
</table>

Data provided as n(%) unless otherwise indicated.
visited a doctor for regular check-ups. No significant association was found between going to check-ups and having a chronic disease. While 16.7% of individuals with a chronic disease reported going to doctors for check-ups even when they were not sick, only 13.5% of individuals who did not report having a chronic disease visited a doctor for regular check-ups. No significant association was found between going to check-ups and having a chronic disease and there was no association between method of healthcare payment and going to a checkup. Only 46.8% reported feeling confident in scheduling a doctor’s appointment. 46.7% of participants reported knowing where to go if they needed help finding a doctor; 41.3% of these individuals reported going to the hospital while 50% reported going to a primary care provider, indicating that emergency care may be the primary means of healthcare for many individuals. In fact, emergency departments and urgent care clinics were the second most common site of healthcare for this study population, with a doctor’s office being the most common (Figure 1). The refugees’ region of origin, the amount of time a refugee had lived in the US, and level of education were not significantly associated with where refugees surveyed sought healthcare when sick (p=.804; p=.508; p=.102; respectively).

Figure 1: When I get sick, I:

Money was the second most frequently reported major barrier (34.8%) (Figure 2a). Region of origin was not significantly associated with identifying money as the major barrier to accessing healthcare (p=.091), though money was more commonly identified as a barrier for those refugees from Iraq and Iran (Figure 2b). 47.7% of our study population reported being unemployed and 69% of refugees reported that they could not pay their medical bills every month. Interestingly, 79.1% of respondents reported having some current form of health payment system or insurance, yet there was no significant association (p=.675) between this and going to check-ups even when respondents were not sick. Finally, refugees from Nepal and Bhutan were significantly more likely to agree to the statement that if they had more money they would receive better healthcare (p=.000), while refugees from Burma were significantly more likely to disagree (p=.001).

Transportation was the third most frequently reported major barrier (30.4%). 60.4% of refugees reported having trouble finding transportation to their appointment. The public bus was the most frequently reported primary mode of transportation used when seeking healthcare (43.8%) (Figure 3). Only 35.4% of refugees reported owning a private motor vehicle. Not owning a private motor vehicle was significantly associated with reporting transportation as a major barrier (p=.009), as was the self-reported primary mode of transportation (p=.042). Interestingly, private vehicle ownership and primary mode of transportation were not significantly associated with reporting money as a major barrier (p=.066 and p=.078).

Other major barriers to accessing healthcare that were reported include family responsibilities (10.9%) and having time to go to the doctor (6.5%). Of those employed, 35.0% percent reported that their job does not allow them to take time off to seek healthcare. 64.6% of respondents reported they waited a long time to be seen at the doctor’s office, but 56.5% reported that the wait time was worth it.

Only one respondent (2.2%) reported culture as a major barrier in accessing healthcare. 83.3% of refugees reported that they felt healthcare providers were sensitive to their culture needs and practice. However, there was a significant association between where refugees sought healthcare and whether they felt medical personnel
understood them. Refugees that used the emergency room or urgent care clinic were more likely to feel that healthcare providers were sensitive to their cultural needs and practices than those going to a doctor’s office (p=.009).

Interestingly, there were no significant associations based on gender. More women reported going to check-ups than men, but the difference was not significant. There was no difference between genders in regards to prevalence of chronic disease, confidence in scheduling a doctor’s appointment, and identification of major barriers.

DISCUSSION

Previous research has demonstrated that barriers to accessing healthcare for the refugee population fall under two major categories: structural barriers and internal barriers. Internal barriers are those barriers unique to each individual which are shaped by their own preferences and perspectives on healthcare. Structural barriers are more systemic in nature and often require intervention at organizational levels. The results of our study showed that for our population, structural barriers currently comprise the majority of obstacles to accessing care. In order to successfully eliminate barriers to healthcare access among refugees we must prioritize and address the cost-cutting and difficult structural barriers first, and then focus our interventions in a way that specifically targets the needs of specific ethnic groups and individuals.

For example, transportation continues to be a major barrier despite the wide availability of a public bus system. This might be due to this population’s struggle to read maps written in English or their ability to afford bus fare which can cost up to $35 per month. While the county healthcare system has attempted to overcome the language barrier by providing free telephone translation services, this phone service is not meeting the needs of the community. It does now allow for translation of verbal cues, it is unavailable at many specialty clinics, and it does not provide translation services for many of the languages utilized by our study population. Finances remain a major barrier despite Bexar County’s provision of an available healthcare payment assistance program through CareLink. CareLink must be renewed frequently and refugees are often dropped from coverage due to a lack of knowledge about how to maintain and renew their enrollment or an inability to afford the monthly bills. This creates a vicious circle in which refugees use the emergency room for primary care and then are unable to pay the resulting expensive bills, a fact further compounded by a nearly 50% unemployment rate among our population. Thus, in order to provide adequate access to care, the barriers of language, financial issues, and transportation must first be addressed. Moreover, due to the unique differences between refugees from varying parts of the world, it is imperative that interventions and programs are tailored specifically for each ethnic group in order to most effectively address these barriers.

While mistrust of medical providers and perceived discrimination are often cited as being the major internal barriers for refugees and immigrants in accessing healthcare, in our study 95% of refugees agreed that medical personnel were sensitive to their cultural needs and practices and only one refugee listed culture as a major barrier. Cultural barriers are not less salient among our study population than in previous studies, but they appear to be specific for certain ethnic groups, highlighting the need for different approaches for different groups. We hypothesize that once the major structural barriers are addressed, these internal barriers will become more significant to our refugee population. Maslow’s Hierarchy of Needs may help explain why the internal barriers are less significant compared to the structural barriers at this point of acculturation32. Maslow proposed that distinct motives are arranged in a pyramid: immediate physiologic needs, safety, affection, esteem, and self-actualization. He suggested that people cannot desire safety if their immediate physiologic needs such as food and shelter are not being met. Similarly, refugees may not see that their cultural needs are not being addressed by healthcare providers if they cannot yet access healthcare in the first place. This further emphasizes that interventions and systemic changes aimed at addressing structural barriers must incorporate cultural sensitivity in order to help mitigate the development of internal barriers.

We propose that one solution to address these structural barriers in a culturally appropriate way is through a medical accompaniment program. The term accompagnateur was first used to describe the community health workers in rural Haiti that helped deliver directly observed therapy (DOT) to HIV patients with tuberculosis in the 1980s33. Since then accompaniment programs have been developed in the US and worldwide to help patients navigate the healthcare system34. We believe that a medical accompaniment program that pairs refugees with healthcare workers or volunteers may be an effective way of helping to address these structural barriers and with time can also help to diminish the internal barriers that may arise.

Our study is not without limitations. One major limitation is the small sample size which precludes our findings from being generalized to the city, state, or region, or national refugee population. We also sampled from two distinct populations, SARHC and the community, in order to compare the two populations. However, the small size of the SARHC group (n=6) prohibited us from analyzing these populations separately. Their responses were nevertheless included in our study because they met our eligibility criteria and contributed to characterizing the various barriers refugees in our community face. Although this might have introduced unintended heterogeneity into our study population, we believe it does not because SARHC is not a replacement for primary care services, as demonstrated by only 8.7% of the study population reporting that SARHC was their most common site for health care (12% of sample was taken from SARHC). The small sample size also led to even smaller samples when the data was disaggregated by country and country clusters. For example, only 5 participants were from Congo, Cameroon, or Burundi, and only 1 from Sri Lanka, which prohibited us from reporting these results. We did not specify in our criteria that only one subject per household would be sampled, since this would be difficult to discern while maintain anonymity given the large amount of cohabitation that exists among the population. Thus, some responses may be non-independent. Another limitation was the translation of two of our questions which were phrased to include double negatives. One question assessed cultural barriers and another question assessed a barrier regarding time. We were not able to use the responses to these questions in our analysis. Finally, for those participants recruited from SARHC, it is possible that the dual role of health care providers as investigators influenced their responses to survey questions regarding the cultural...
awareness and appropriateness of health care providers in general. Future studies should explore the differences that exist between various ethnic groups and how interventions and programs can be tailored to different groups. Studies to assess health literacy as a major barrier to accessing healthcare would also be prudent.

ACKNOWLEDGMENTS
This research was supported by funds from the Center of Medical Humanities and Ethics at the University of Texas Health Science Center at San Antonio.

The authors would like to acknowledge Lylith Schneider, our community mentor, who helped make St. Francis Episcopal Church available for our survey sessions; Margaret Costantino, with Center for Refugee Services; Dr. Andrea Berndt for her help with the data analysis; the many translators including Dr. Moshtagh Farokhi; and all of the student volunteers who helped recruit participants, distribute surveys, and translate surveys.

REFERENCES

Follow-up Commentary: Translating Research into Action – The San Antonio Refugee Health Clinic
Neelima Navuluri MD, B. Alex Foster, MD, MPH, Andrew Muck MD, Moshtagh Farokhi, DDS, MPH, Roseann Vivanco, MSN, RN
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The study Assessing Barriers to Healthcare Access Among Refugees Living in San Antonio, Texas, found in this volume of the TPHJ was a student-led effort to better characterize the barriers refugees face when accessing health care. The study demonstrated how social determinants of health factored into the overall delivery of health care which impacted community health for the refugee population. Limited data exists about the barriers to care for refugees and the obstacles to seeking health care faced by refugees. The findings helped elucidate the social determinants that were the main obstacles for the majority of refugees surveyed. San Antonio Refugee Health Clinic (SARHC) helps address these structural barriers by being located within walking distance of many of the apartment complexes where refugees live, providing translators as available, and being completely free of cost to the refugee patients.

The need for improved refugee care was initially identified by community partners involved in a church service program and nursing faculty and students at the University of Texas Health Science Center at San Antonio (UTHSCSA) who were doing health screenings for the population. SARHC was established in April of 2011 in response to a need for improved access to health care for refugees. While many refugees faced significant health problems, few were accessing care. Persons with refugee status have free insurance coverage, usually Medicaid, for approximately the first 6-8 months after arrival in the United States, funded federally via the Office of Refugee Resettlement. After this initial period of coverage, they are expected to be able to obtain health insurance via their employer or other means which is often a challenge.1 It became clear that many refugees were not able to obtain health coverage after losing their initial period of coverage.

To fill the gap in coverage and to act as bridge back into the health care system, the SARHC was developed as a partnership between the Schools of Medicine, Dentistry, and Nursing at UTHSCSA. SARHC is a multidisciplinary, student-run free clinic held bi-weekly and located in the South Texas Medical Center in San Antonio near apart-
ment complexes where many refugees in San Antonio are placed upon resettlement to the United States. Nursing, medical, and dental students form teams responsible for the initial intake, history, physical, and assessment of each refugee patient with oversight provided by nursing, medical, and dental school faculty. Dental students and faculty also see and assess refugee patients requesting dental care, with a goal of having nursing and medical students receive education in dental care and patient education. A limited supply of medications and basic point of care testing such as blood glucose and urinalysis is available, and the clinic can serve as an entry point for higher levels of care when appropriate. Students and faculty from each school work together to coordinate the logistics and operation of the clinic and participate in a wide range of educational and quality improvement activities related to the refugee population.

Working with the refugee population allows students and faculty to identify and help address resource-limitations among a uniquely vulnerable population within a community-service learning model and to build cultural competence. A goal of the model is to improve interprofessional education (IPE) among the different disciplines of the nursing, medical, and dental schools. Few educational or clinical programs exist that bring together students from different disciplines. A goal of this IPE model is to improve communication among providers that will lead to health care that is safe, effective, and patient centered. This model is likely to promote and support the process by which students, residents, fellows and faculty with different health disciplinary backgrounds learn and practice health care in complementary ways leading to the best health outcomes for the patient.

As a direct result of the study by Navuluri et al, an accompaniment program was started to better address these barriers on an individual level. The program is designed to be student-led with 2-3 students pairing with one patient to help guide that person through the medical system. Faculty oversight and support is provided by the Center for Medical Humanities and Ethics at UTHSCSA. The feedback in the program’s first 6 months has been overall very positive from both students and patients. As identified in the paper, the students have helped address very tangible barriers such as interpreting bank statements, navigating the bus system, clarifying payment policies and arranging for translators. Their experience with navigating the challenges patients face makes tangible the process of empathic care learned in academics while the benefit to the patients is very real - they succeed in accessing the care they need. As the accompaniment program progresses, we are collecting feedback and outcomes data.

The student-run clinic is able to address some of the barriers for some of the refugees. The Affordable Care Act (ACA) could potentially help with the barrier of health care coverage. Persons with refugee status do not have the 5 year waiting period that some other immigrants have, and they may participate in the health exchange of the ACA. Texas’ choice to not accept the Medicaid expansion part of the ACA means that this population will continue to be at high risk of being uninsured, despite the high prevalence of chronic conditions. This means that the need for various safety programs will persist.

Refugees make up a rich and unique part of our society yet are particularly vulnerable given their cultural displacement and often traumatic personal narratives. Understanding their barriers to care and partnering with them to help address those barriers can help them transition into our society in a productive and meaningful way.

REFERENCES
Empowering Health Promotion Students on the Texas-Mexico Border Through Digital Storytelling: Implications for Public Health in Vulnerable Communities

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ABSTRACT
US–Mexico border communities are at high risk for health disparities related to communicable and non-communicable diseases owing to structural issues such as poor access to health care, lack of health insurance, health professional shortage, and immigration-related barriers. El Paso, Texas, is a city located adjacent to Juárez, Mexico, on the US-Mexico border with more than 81.4% of the population being of Latino/Hispanic (Mexican American) origin and 42% of the residents uninsured. Health promotion professionals practicing in Texas-Mexico border communities need to be sensitive about the regional, social, and cultural contexts which contribute to the high prevalence of health disparities inherent to the region. Public health professional preparation must incorporate significant learning experiences which raise the critical consciousness vital to empowering health promotion and public health professionals to address social determinants of health. Digital Storytelling empowers individuals to create social change through reflection of individual experiences and transforming the same to broader community contexts. Hence, Digital Storytelling was used as a pedagogical method to engage and empower undergraduate health promotion students enrolled in a health promotion program planning course at the University of Texas at El Paso, a Hispanic Serving Institution (HSI) situated on the Texas-Mexico border. Twenty-nine students designed four Digital Stories to address peer health issues using a rigorous program planning framework and screened them on-campus for peer health promotion. The insights from this Digital Storytelling assignment and their implications for empowerment education in public health professional preparation and Texas-Mexico border health are discussed.

INTRODUCTION
International border regions, in particular, are vulnerable to health disparities owing to unique border phenomena like migration, acculturation, and structural violence.1,2 The social determinants of health contributing to such structural violence include poverty, low educational attainment, lack of access to services, high cost of healthcare, and an inadequate built environment.3 More than 30% of the US-Mexico border population live below the poverty level with alarming rates of obesity, diabetes, cancer, chronic liver disease, HIV, and substance use. Sixty-three percent of US-Mexico border counties are Health Professional Shortage Areas (HPSAs) with inadequate primary and mental health care services.4,5 Border communities are also home to a large number of foreign-born residents (72% being from Mexico).6 El Paso, Texas is located on the US-Mexico border with more than 81.4% of the population being of Latino/Hispanic (Mexican American) origin and 42% of the residents being uninsured.7 While 71% of adults in El Paso County are overweight or obese,8 15.6% diagnosed with diabetes,9 and almost 40% diagnosed with high cholesterol levels,10 28% of adults in El Paso County report that they were unable to afford to see a doctor.10 In Texas-Mexico border communities like El Paso, Texas, health promotion that does not address structural factors such as poverty, access to healthcare, and acculturation would be ineffective and unethical.1

The current US national health agenda emphasizes addressing structural violence as a precedent to health disparities while promoting public health in vulnerable communities. The Healthy People 2020 goals related to social determinants of health, educational, and community-based programs and public health infrastructure stress the need for health education to focus on creating social and physical environments with access to efficacious health promotion programs while urging local public health agencies to incorporate core competencies for public health professionals they employ.11 The National Commissions for Health Education Credentialing (NCHEC) responsibilities and competencies for health education specialists, which range from assessing individual and community health education needs to implementing health education interventions and advocating for health promotion,12 cannot be fulfilled if professional preparation does not empower advancing the national health agenda. Clearly, the preparation of the public health workforce is a key link in aligning local and national health promotion goals.

Enlisting health promotion and public health students as agents of change through civic engagement has shown to be an effective strategy to enhance the health of marginalized communities.13 The level of critical consciousness about the priority community at the individual learner level is key to such engagement.14 Raising critical consciousness involves a significant learning experience with a real-world context.14 A learning experience becomes significant when it moves beyond acquiring foundational knowledge and continues to foster the application and connection of knowledge to real-world situations.14 Critical thinking and consciousness lay the foundation for becoming an independent learner. Digital Storytelling promotes such critical consciousness.15,16

Digital Storytelling is a participatory method which uses short visual narratives (about five minutes in duration) to convey an individual’s or group’s experience. Digital Stories may include still images, video, and/or audio clippings. Digital Storytelling enables individuals to create social change through reflecting on their individual experiences in terms of broader contexts (social, historical, regional, etc.) and expressing their personal voice.15,16 This power of expression provided by Digital Storytelling is particularly significant when it enables the voices of marginalized and oppressed individuals to be heard.15 Since the 1970s, Digital Storytelling has enabled educators, health promotion specialists, medical students, activists, and artists to use personal voices in creating big-picture change through various venues including problem-based learning, health education, and community based participatory research.15,17-20 While aiding to transcend language and writing-related barriers to expression, the focus on individual experiences in relation to broader contexts makes Digital Storytelling applicable to various fields and topics including community organization, policy change, pediatrics, sexual health, environmental safety, and mental health.21 Since Digital Stories allow for incorporating available photographs and videoclips in addition to students’ original contributions, they are effective in terms of time-management as course assignments.17 The availability of inexpensive or free software such as Movie Maker and iMovie and a generation of students raised in a digital social-networking age make Digital Storytelling a cost-effective and learner-centered pedagogical strategy.22,23

POPULATION AND METHODS
The University of Texas at El Paso (UTEP) is located on the El Paso, Texas-Mexico border with 23,000 students (19,696 undergraduate, >1000 Mexican Nationals), 78% Hispanic, 50% first generation college-going, with over 85% of undergraduate students being from El Paso County.24 The UTEP College of Health Sciences offers a Bachelor of Science in Health Promotion program and a Masters in Public Health program through the Department of Public Health Sciences. A majority of UTEP health promotion graduates go on to
serve in and around El Paso, Texas.

Twenty-nine undergraduate health promotion students enrolled during fall 2013 in the Health Promotion Program Planning and Implementation course (HSCI 4307) taught by the author participated in Digital Storytelling as a major course project. The author incorporated the six components of Fink’s Taxonomy of Significant Learning - foundational knowledge, application, integration, human dimension, caring, and learning how to learn - through an integrated course design which calls for integrating learners’ situational factors, significant learning goals, educational feedback and assessment, and active learning assignments. In order to fuel students’ curiosity through a significant learning experience while engaging them in a hands-on peer health promotion, the author decided to incorporate the following situational factors of UTEP student population in the course design as inherent strengths or potential for resilience:

- being representative of the local community and culture
- being bilingual (Spanish/English)
- potential to conduct peer health education owing to their perspectives on the message content and formats
- knowledge of prevalence of risky behaviors within peer networks
- extreme interest in using technology, particularly digital networking media, and
- high probability of joining the local health workforce

The course learning objectives focused on enabling students to examine effective health promotion program planning for communities in the El Paso, Texas-Juarez, Mexico, region and to align those strategies with applicable Healthy People 2020 objectives. The Digital Storytelling course assignment addressed peer health and was designed as a team-based learning experience for (i) raising critical consciousness related to individual and community health risks, (ii) designing health promotion strategies appropriate for the priority population, and (iii) exploring the national Healthy People 2020 agenda in relation to the health disparities addressed.

The author assigned students to four teams (7-8 per team) during the second week of the semester based on reviewing students’ academic major and minor and co-curricular activities. Assigning teams in this manner ensured optimal distribution of a variety of skill sets among the students to aid in the Digital Story production and provided students with a real-world workplace experience of collaborating in assigned teams. Teams were instructed that their Digital Story topic must be currently relevant to UTEP students based on evidence in scientific literature and aligned with Healthy People 2020 objectives for the chosen health issue. The author approved the Digital Story topics after reviewing the evidence presented. Project deliverables included a five-minute health promotion Digital Story for the health issue addressed and a program manual comprising a needs assessment using secondary data, a program rationale, program description, and a preliminary evaluation plan.

The Digital Story activities and deliverables were aligned with coursework related to various components in planning and implementing health promotion programs. For example, each team conducted a needs assessment for their Digital Story topic following in-class discussion on needs assessment methodology or identified the theoretical framework for their Digital Story concept following a class on health promotion theories. Students had access to on-campus computer labs and technology support, and resources related to filming were provided in class. In-class time was allotted for each team to work on the project and obtain timely feedback on video-script, voice-over, content, etc. All students were administered the university media consent form and instructed not to involve peers other than their classmates in any Digital Story video-clips or photographs. Since this Digital Storytelling project was a course product which was part of overall course grading and not a research study, institutional review board approval was not required.

RESULTS

Four health promotion Digital Stories were produced: 1. “Break-It” addressing tobacco smoking, 2. “You Booze, You Lose” addressing driving under the influence, 3. “Don’t Stress About Stress” focusing on stress management, and 4. “Eat, Move, Live” addressing nutrition and physical activity. Each Digital Story was scripted with photographs and video clips - original and cited - about the health issue addressed. The Digital Stories also included practical risk reduction strategies catered to appeal to the students’ peers and encouraged utilization of topic-specific on- and off-campus health resources. Since a majority of class students were employed, which is also typical of UTEP minority student population, the in-class time allotted for the group project was critical to project completion. The author collaborated with the UTEP Wellness Program and the Texas Department of State Health Services (DSHS) Region 9/10 Tobacco Prevention Program to enable students to screen their Digital Story for two hours for UTEP students, staff, faculty, and community health professionals at the Great American SmokeOut event on November 21, 2013. About 250 individuals from 19 on-campus and community-based organizations attended the event. Community partners included the City of El Paso Department of Public Health, El Paso Diabetes Association, Centro San Vicente, and American Cancer Society. The DSHS acknowledged the students’ Digital Story peer health promotion by awarding a certificate to each student. This event enabled students to interact with their priority population and potential employers and gain feedback about their Digital Story. After the Digital Story screening event, each group participated in a 30-minute group reflection session and reported the skills they gained from project participation (Table 1).

This assignment also provided a participant observation opportunity of student engagement for the instructor in terms of Fink’s taxonomy. The author observed the students to be more engaged in the project after they completed the needs assessment and began scripting. An increase in awareness about on-campus health resources resulted from conducting needs assessment, and some students who hesitated to express their views openly in class were actively participating, even acting, for the Digital Story. During the project design, students seem also to analyze their own health behaviors in relation to their Digital Story topic while some shared their strategies for reducing a certain risk behavior. Table 2 illustrates the implied connections between students’ feedback on learning outcomes from the Digital Story assignment and specific components of Fink’s significant learning taxonomy.

The Digital Story products were reviewed and critiqued by all students in the class, the UTEP Wellness program coordinator, and the author. The Wellness program coordinator indicated that they would like to use at least two of the Digital Story products as health promotion tools on UTEP campus. Copies of the Digital Stories were provided to the Wellness Program.

DISCUSSION

This Digital Storytelling experience provided valuable insights related to public health higher education and health promotion in vulnerable communities. Student feedback indicates that a learning assignment which incorporates real-world contexts fosters active engagement while enabling the learner to care about her/his environment. Such caring, or “the human dimension,” can be key to pro-
### Table 1. Student group reflection feedback on skills gained from Digital Storytelling team project

<table>
<thead>
<tr>
<th>Skills Digital Story teams reported as being confident in practicing in a real world setting</th>
<th>Number of Digital Story teams reporting the specific skill (N=4 teams; 29 participants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducting needs assessment</td>
<td>4</td>
</tr>
<tr>
<td>Developing mission, goal and/or objective statements</td>
<td>3</td>
</tr>
<tr>
<td>Practicing cultural sensitivity</td>
<td>4</td>
</tr>
<tr>
<td>Developing a program rationale</td>
<td>3</td>
</tr>
<tr>
<td>Identifying primary and secondary data</td>
<td>4</td>
</tr>
<tr>
<td>Applying health promotion theories to program planning</td>
<td>3</td>
</tr>
<tr>
<td>Examining ethical issues in program planning and implementation</td>
<td>2</td>
</tr>
<tr>
<td>Time management &amp; organizational skills</td>
<td>3</td>
</tr>
<tr>
<td>Team work and leadership</td>
<td>2</td>
</tr>
<tr>
<td>Finding available resources (information, services etc.) for a program</td>
<td>3</td>
</tr>
</tbody>
</table>

### Table 2. Student feedback on Digital Storytelling project connected to Fink’s Significant Learning Taxonomy

<table>
<thead>
<tr>
<th>Quotes from Digital Storytelling teams on insights gained through project participation</th>
<th>Related Component(s) in Fink’s Taxonomy of Significant Learning</th>
</tr>
</thead>
</table>
| “As a group, we’ve discussed the concepts and processes on what we learned throughout this semester in program planning. A big concept about planning our Digital Story is getting to know the priority population by [designing a] rationale and most importantly a needs assessment the covers the scope, data, risk factors and validating the need before the planning purpose” | • Foundational Knowledge (understanding and remembering information and ideas)  
• Application (Skills & critical thinking)  
• Integration (Connecting ideas, people, realms of life) |
| “we learned that a professional must first know the community in which he/she will be working in to the fullest extent possible by conducting a thorough needs assessment, gaining entry into that community” | • Learning how to learn (Inquiring about a subject)  
• Human Dimension (Learning about oneself; others) |
| “[we learned] how important it is to be culturally sensitive, to know how to identify priority population, to know the concept of team work, how to market the program and sell it..the importance of double-checking and making sure it is an actual need [for the priority population]” | • Application (Skills & critical thinking)  
• Integration (Connecting ideas, people, realms of life)  
• Learning how to learn (Inquiring about a subject)  
• Human Dimension (Learning about oneself; others) |
| “Taking into consideration the resources available to the health educator and to the priority populations can make an impact on...the issues that can be addressed through the program” | • Integration (Connecting ideas, people, realms of life)  
• Caring (Developing new feelings, interests, values) |
| “The health issue in a community must be recognized through research...it must also be a concern addressed by the majority of the community” | • Integration (Connecting ideas, people, realms of life)  
• Human Dimension (Learning about oneself; others) |
| “we learned to focus on what the community is already doing to [address the problem] to avoid duplication of efforts. We must also look at what barriers we might hit...both internal and external barriers” | • Human Dimension (Learning about oneself; others)  
• Caring (Developing new feelings, interests, values)  
• Learning how to learn (Inquiring about a subject) |
In addition to engaging the student in course content, incorporating learner characteristics and situational factors in health promotion course design may be an effective strategy to incorporate regional and cultural awareness in health professional preparation. Digital Storytelling can be a valuable and effective pedagogical tool for mentoring public health students for multiple reasons: the learner reflects on health risks at the individual, peer, and community level through the power of expressing personal voice; critical consciousness can be raised about how structural violence contributes to health disparities; the assignment design can be flexible to address any health disparity, program planning concept, and priority community; it is cost-effective; and appeals to the current digital-age learner. In addition to practicing program planning, Digital Storytelling could facilitate students to explore their potential related to technology, scripting, photography, communication, and leadership.

Digital Story assignments requiring public health students to address peer health issues may also increase on-campus engagement and enhance participating students’ health owing to the knowledge gained about on-campus health resources. Raising critical consciousness about peer health risks and behaviors can also be valuable in terms of urging students to examine community-based structural risk factors, especially in educational settings like UTEP where the majority of students are from local communities. Health promotion and public health education can become empowering through dialogue facilitated by incorporating learners’ situational factors related to health risks and environment. The experience with HSCI 4307 at UTEP implies that Digital Storytelling may be an effective tool to empower the current digital generation health promotion student to be an agent of change for promoting health in vulnerable communities like Texas-Mexico border communities.

REFERENCES
Multi-jurisdictional Norovirus Outbreak at a Swimming Pool

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Summary
On Saturday June 1, 2013, the Galveston County Health District's (GCHD) epidemiology program received a report that 50 members of an area swim team “A” had developed a gastrointestinal illness. However, after further investigation we learned that pool users who became ill were residents of both Galveston County and Harris County. The swimming pool these swimmers used is located in Galveston County, Texas, in city “A” and is inspected and issued its permit by the GCHD. However, part of city “A’s” boundaries are within the southern part of Harris County. The pool is an eight-lane pool with a maximum pool depth of 5 feet and pool capacity of 235 patrons; this pool also has a baby pool attached.

INTRODUCTION
Given the reported murkiness of the pool water, it is likely that a contamination event, such as fecal incontinence, occurred on or about May 25, 2013. Previous outbreaks of enteric infections associated with recreational water have occurred with no obvious contamination event.1-5

Norovirus remains the most common cause of epidemic gastroenteritis in the United States, causing an estimated 23 million cases each year.3 Challenges to prevention of norovirus-associated outbreaks include the low infectious dose, the multiple modes of transmission (e.g., person-to-person, foodborne, and waterborne), the absence of long-lasting immunity, and the diversity of strains that do not confer heterotypic protection. Although waterborne outbreaks of norovirus gastroenteritis are much less commonly reported than foodborne outbreaks, the recorded incidence of norovirus-associated waterborne disease is likely an underestimate because of the lack of simple diagnostic technology. However, norovirus outbreaks associated with swimming pools are rarely reported.1-5

Norovirus causes inflammation of the stomach or intestines or both. This is called acute gastroenteritis. The most common symptoms are diarrhea, vomiting, nausea, stomach pain, fever, body aches and headache.8 Individuals can protect themselves from norovirus by practicing healthy swimming behaviors, including not swimming when experiencing diarrhea, not swallowing pool water, and practicing good hygiene.

METHODS
Epidemiologic
On Saturday June 1, after receiving the report, a GCHD epidemiology program staff member contacted the president of area swim team “A” to get more information and request a line list of the members of the team who were ill. The president sent an email to the parents of all members of the swim team.

The GCHD staff member was also informed about a different group of ill children from elementary school “B”, which is located in city “A” but under Harris County’s jurisdiction. These ill children attended a pool party at the pool in city “A” on Wednesday May 29, 2013. This information was forward to Harris County Public Health and Environmental Services (HCPHES) for further investigation.

Once HCPHES received the report, they contacted the school nurse and requested a line list of the students from her school who attended the school swim party on May 29. HCPHES also contacted the pool manager and was informed that there had been a swim meet was held there on May 25 and on June 1 a private pool party was held there. HCPHES contacted the swim team coordinator and the host of the private party and requested contact information on the participants. HCPHES called participants, and all who were reached completed a questionnaire.

Upon notification of the outbreak on June 1, 2013, GCHD epidemiology staff notified the Galveston County Health Authority who then notified the County Judge and the GCHD’s environmental department. The on-call environmental inspector was sent to the pool the same day. Pool authorities voluntarily closed the pool upon the inspector’s arrival.

Late in the afternoon of June 1, 2013, the GCHD epidemiology team began receiving emails from parents of the ill swimmers. Based on preliminary data from the emails received by GCHD, and phone calls made by HCPHES, a case definition and hypothesis were established. The case definition is as follows: a person experiencing diarrhea (three or more stools within a 24-hour period) or vomiting, with or without any of the following: fever, abdominal cramps, chills, body aches or headache; with symptom(s) lasting 12-72 hours; and, who swam in the city pool between 5/25/2013 and 6/1/2013 or is a close contact of someone who did. The hypothesis is that an organism in the pool was the source of the illness.

Upon further investigation, a swimmer reported “the pool water was so cloudy that you could not see the person swimming in front of you, even while wearing goggles”. A few parents and other swimmers reported that the pool appeared to be cloudy as far back as Monday, May 27, 2013. Swim team “A” has 297 members, and during the week of May 25, 2013 to June 1, 2013 only about 150 members swam in that pool.

Environmental
A comprehensive inspection of the pool was conducted by GCHD environmental services on June 1, 2013. The assessment included an evaluation of chlorine and pH checks, a review of previous chemical levels from available records, a review of training records of pool operator staff, the general condition of the equipment, and the operational status of filters, pumps and chlorinators. This pool is inspected annually, and there have been no reports of previous issues with the pool.

Key findings: Although the equipment appeared to be operating properly, the pool water was cloudy even after hyperchlorination. The drains at the bottom of the pool could not be seen clearly. The chlorine level was at 5 ppm and the pH level showed 7.21. The facility has an Automatic Chemical Feed for chlorine and pH. Chemical test records from March 5, 2013 to June 1, 2013 were available, and all readings were acceptable. The cause of the cloudiness was not identified, and the pool was clear when a water sample was taken on June 3, 2013.

There are numerous postings around the pool directing users to avoid unsanitary practices such as spitting and urinating in the pool. Babies are required to wear swim diapers, which are available for purchase at the pool.

Laboratory
Three ill individuals from Galveston County and seven from Harris
County submitted stool specimens to the City of Houston Department of Health and Human Services Bureau of Laboratory for testing.

Water samples were submitted to the GCHD public health laboratory for testing.

RESULTS

Epidemiologic

One-hundred-eighty-five Galveston County families, representing a total of 297 swimmers, were contacted via email with a short questionnaire for parents of the swimmers to complete. Of those 185 emails sent, 64 families (35%) responded to the email. A total of 71 questionnaires were completed by the parents of the swimmers, which includes an additional 7 household contacts. Sixty-eight of the 71 questionnaires reported someone in the household, swimmer or contact, was ill. Of those reporting illness, sixty-five met the case definition. There were 58 primary cases and 7 secondary cases.

These sixty-five individuals were residents of GCHD’s jurisdiction with ages ranging from 3-42 years of age. There were slightly fewer females than males. The attack rate was 38.6% for swim team “A” participants who swam that week.

The Harris County Public Health & Environmental Services (HCPHES) Epidemiology program conducted gastrointestinal illness investigations of residents in Harris County’s jurisdiction. These residents were exposed to the city “A” swimming pool by participating in three different activities on May 25, 29 and June 1, 2013. HCPHES identified 79 primary cases in these three groups and 15 secondary cases among household contacts.

Vomiting and diarrhea were the most common symptoms reported, with 135 of 159 ill persons vomiting and 81 of 159 ill persons experiencing diarrhea, followed by abdominal cramps, fever, nausea, head ache/ body ache, fatigue and chills. No one was hospitalized. Of the 159 cases, 22 cases were likely due to secondary transmission. The incubation period in most primary cases ranged from 12 to 24 hours, and the duration of illness ranged from 12 hours to 6 days. The range of illness was May 24, 2013 through June 11, 2013. Approximately 31.4% of the cases included persons who reported that the onset of illness started on May 30, 2013. On May 29, 59.8% of the primary cases had exposure to the pool.

The most exposures to the pool were on Wednesday May 29, 2013, with some swimmers experiencing multiple days of exposure.

Figure 1. Epidemic Curve of Norovirus Outbreak for Galveston and Harris Counties’ cases

Figure 2. Pool exposure dates for Galveston County and Harris County ill swimmers
Environmental
The pool was closed and remained closed until a water sample could be taken and results obtained. Water samples were taken by the environmental department on Monday morning (June 3) and brought to the lab for testing. Water sample results, on June 4, 2013, indicated no bacterial contamination. City officials were notified that the pool could be re-opened.

Laboratory
Overall, ten stool specimens were tested for norovirus, three from Galveston County and seven from Harris County. Nine of the specimens came back positive for norovirus, three from Galveston County and six from Harris County.

CONCLUSION
This outbreak of Norovirus was associated with a swimming pool in Galveston County, Texas. The total ill from both Galveston and Harris Counties was 159 individuals, 58 primary and 7 secondary cases from Galveston County and 79 primary and 15 secondary cases from Harris County. Water sample results on June 4, 2013 indicated no bacterial contamination, most likely due to the delay in notification and the pool being hyperchlorinated before the samples were collected. There were no fecal or vomiting episodes reported at the swimming facility during the week in question, May 25, 2013—June 1, 2013.

The investigation of this outbreak reflects the collaboration of two health departments with different jurisdictions, GCHD and HCPHES, working toward the common goals of implementing interventions that would stop further spreading of the outbreak, preventing additional illnesses and collecting sufficient information to prevent similar outbreaks from occurring in the future. Several conference calls were held, and emails and data were exchanged regularly. Whereas epidemiologic methods identified the cause and characterization of this outbreak, appropriate monitoring, operation, and response protocols could have prevented this outbreak or reduced the duration of virus transmission.1 It was reported that the pool water was murky for six days prior to the outbreak. Additionally, the pool operator hyperchlorinated the water after illnesses were reported and before health inspectors could assess the situation. This prevented the direct testing of the murky pool water samples, and consequent determination of the cause.

Best practices for environmental controls include: Adequate monitoring of water quality by the pool staff to avoid delays in detecting chlorinator-tube malfunction; when pool staff and patrons notice cloudy, turbid water in the pool, swimming should be prohibited until pool water is determined to be safe; when illnesses are reported, pool operators should contact a health inspector for testing of the pool water prior to hyperchlorination; maintenance staff should be promptly notified to institute control measures such as hyperchlorination; pool staff should have formal training in pool disinfection; signage should include a statement that asks persons with symptoms of current or history of recent gastrointestinal illness not to enter the pool until symptoms subside or they are released by a healthcare provider.

Lessons learned:
1. Email is not always the best way to communicate when an outbreak of this magnitude occurs. There were several delays in responding to emails, which may have resulted in the development of some secondary cases.
2. Water samples should be collected at the first sign of cloudy pool water. Early detection of contamination could have prevented the occurrence of the outbreak.
3. Maintain an accurate, up-to-date 24/7 after-hours emergency call tree. This proved to be a valuable tool for beginning investigation of this outbreak. Each jurisdiction has its own 24/7 after-hours emergency number that is answered by different answering services. Operators in both jurisdictions are trained to triage calls using an algorithm.
4. In Texas Health Service Region 6/5 South, we have a Regional Epidemiology Coordination Plan that describes how to handle outbreaks. The plan has proven to be a valuable tool for this outbreak.

REFERENCES
Attitudes Toward Treatment and Potential Barriers to Access of Mental Health Services in a Sample of Elderly Hispanic and Anglo Adults

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ABSTRACT
Negative connotations about mental health treatment and the social stigma associated with mental illness may be important determinants of access to services for senior citizens. Since attitudes are often predictive of behavior, we sought to examine senior’s attitudes toward seeking psychological help, as well as the perceived potential barriers to accessing mental health services in a regional community sample. A total of 188 volunteers (53% Hispanic, 47% Anglo) from senior centers in the local community were interviewed for this study. We found that the Anglo respondents had more favorable attitudes than Hispanic respondents on the Attitudes Toward Mental Health Treatment Scale, but not on the Attitudes Toward Seeking Psychological Help Scale. Implications of these results and suggestions for increasing treatment options to underserved senior populations are offered and discussed.

Historically, negative attitudes towards mental health treatment and the stigmatization of mental illness have long been considered barriers to accessing mental health services, as attitudes are often predictive of behavior. However, attitudes toward mental health treatment in the United States appear to have changed in recent years as access to information regarding the diagnosis and treatment of mental illness has exploded across a variety of cultural mediums including newspapers, television advertisements, and the internet. For example, a recent study found that over 40% of the large sample from the National Comorbidity Survey would “definitely go” for professional help if suffering from mental health problems in 2001-2003 compared to just over 35% in 1990-1992. Likewise, the social stigma associated with mental illness has reduced somewhat over the last few years, with over 40% reporting being “not at all embarrassed” if friends knew they were receiving professional help in 2001-2003 compared with 33.7% in 1990-1992. Nevertheless, if 40% are “not at all embarrassed”, it follows that almost 60% have some degree of embarrassment when seeking mental health services or professional help.

Mental health services are often seen as very important in the promotion of general well-being, so negative attitudes can have a very serious effect on more than just mental health. Senior citizens may not possess accurate knowledge about psychotherapy or mental health professionals, and therefore often have negative attitudes toward psychotherapy and seeking mental health treatment. Not surprisingly, it appears that fears about health frailty are associated with depression in older adults.

According to the United States Census Bureau, Hispanics are now the largest minority in the United States, making up over 13% of the U.S. population; this translates into more than 37 million Americans. These changes in population demographics have the potential to both promote and aggravate social issues of concern for Hispanics and Anglos alike. One such issue is access to health care, and it is estimated that just over 36 percent of Hispanics under age 65 are uninsured compared to just 14.5 percent of Anglos. While economic issues appear to be one of the primary reasons cited for lack of access to health care by Hispanics, even when individuals have access to care via public or private insurance, other sociocultural factors exist which make accessing quality health care difficult. Substantial barriers continue to be present for ethnic minorities who are more likely to be uninsured or underinsured and are less likely to access mental health services.

On average, females tend to have more positive attitudes toward those with mental illness than do males. Females have also consistently had more positive attitudes toward seeking help from a mental health practitioner if necessary (although that is not always true), and they are more likely to use outpatient mental health services than men. These gender differences have been quite consistent across different age groups (i.e., college-age students and adults), although relatively few studies have examined the attitudes of the elderly.

Ethnic identity has become an important concept in the understanding of human development. Research in this area has concentrated on several different groups, including adolescents, adults, the elderly, and homosexuals. Since individuals from minority populations have been less likely to access mental health services, understanding what, if any, role ethnic identity has in accessing mental health services seems warranted.

METHOD
Participant volunteers were solicited from nine senior citizen centers in the local area. One student assistant was bi-lingual and therefore able to translate the survey questions into Spanish for our Spanish-speaking respondents. Data were gathered over the summer months. We were able to secure a total of 188 volunteers from these senior centers in the Corpus Christi area. We had more female (n = 103, 65%) than male (n = 55, 35%) respondents, although 30 failed to indicate sex on their form. The average age of the participants was 73.6 (SD = 8.7) years and the sample included slightly more who self-identified as Hispanic (n = 72, 53%) than Anglo (n = 63, 47%) (see Table 1 for a summary of participant characteristics).

We chose to administer two scales which had been developed to assess attitudes toward seeking mental health treatment. Participants completed the short form of the Attitudes Toward Seeking Psychosocial Help Scale. This 10-item scale measures participants’ responses to items such as “A person with an emotional problem is not likely to solve it alone; he or she is likely to solve it with professional help.” This scale is a briefer version of the one developed by Fischer and Turner, and one used recently to assess changes in attitudes over a 40-year period. Their scale produced an internal consistency estimate (.84 (Cronbach’s alpha); ours was also good, though not quite as high (α = .61); that could be because their was a student sample. Both Anglo and Hispanic respondents were generally quite favorable in their attitudes toward seeking psychosocial help (M = 19.34, SD = 5.11), slightly more so than Fischer and Farina’s (1995) sample of 389 (M = 17.45, SD = 5.97).

Participants also completed the Attitudes Toward Mental Health Treatment Scale. This 10-item True-False instrument includes items such as “Most people should work out their problems by themselves instead of going to therapists” (all items are reverse scored). Again, our sample demonstrated more positive attitudes than the original
sample\(^1\). Their overall mean was only 4.30 (SD = 2.15), compared to our overall mean of 6.69 (SD = 2.66)\(^1\).

Additionally, we administered the Multigroup Ethnic Identity Measure (MEIM)\(^2\) which is a global measure of ethnic identity. This was done in order to ascertain what, if any, contribution ethnic identity might have to attitudes about health seeking and mental health treatment. Although there has been some concern regarding the use of the MEIM\(^2\), it remains the most widely used non-specific global measure of ethnic identity in use. Our internal consistency estimate was a solid .79 (Cronbach’s alpha). In addition to the MEIM, participants also completed a brief demographic form as well as some items generated by the authors designed to assess various aspects of seeking mental health treatment. These included items such as “Is it difficult for you to get to a doctor’s office?” and “Have you ever received professional psychological services?” All surveys and procedures were approved by the Institutional Review Board at Texas A&M University-Corpus Christi before contact was made with any of the respondents.

**RESULTS**

The only significant difference in demographics between Anglo and Hispanic respondents was parental education. Just under 40% of Anglo fathers had a H.S. diploma/GED or some college compared to just under 9% of Hispanic fathers (\(\chi^2(2) = 17.3, p < .01\)). There were no other important differences between Anglo and Hispanic respondents; for example, the vast majority of both Anglo and Hispanic seniors typically did not find it difficult to get to a doctor’s office (90.5% of Anglos and 86.1% of Hispanics). Although there may be differences in physical access to mental health professionals and mental health treatment between Hispanic and Anglo seniors, our data suggest that—at least in our geographic area—those differences are insignificant.

We did not find the gender differences Fischer and Farina\(^2\) found in their sample. Both males and females had essentially the same mean score on the ATSPH scale (Male \(M = 19.00 (SD = 5.49)\), Female \(M = 19.66 (SD = 5.03)\), \(t(135) = .71, n.s., eta^2 = .004\). There was also no difference on the ATSPH scale between Anglo and Hispanic respondents (Anglo \(M = 19.91 (SD = 5.62)\), Hispanic \(M = 19.30 (SD = 4.98)\), \(t(117) = .63, n.s., eta^2 = .003\).

However, we found that the Anglo seniors had more favorable attitudes than Hispanic seniors on the Attitudes Toward Mental Health Treatment (ATMHT) scale (Anglo \(M = 7.35 (SD = 2.65)\), Hispanic \(M = 5.80 (SD = 2.73)\), \(t(119) = -3.17, p < .01, eta^2 = .08\) (See Table 2). Just as on the ATSPH scale, there was no gender difference on the ATMHT scale (Male \(M = 6.68\), Female \(M = 6.70\), \(t(140) = .03, n.s., eta^2 = .000\).

Ethnic Identity, as measured by the MEIM, was different for Hispanic and Anglo respondents. Specifically, Hispanic respondents were higher in overall ethnic identity (Hispanic \(M = 3.17 (SD = .53)\), Anglo \(M = 2.71 (SD = .56)\), \(t(110) = 4.49, p < .01, eta^2 = .16\), affiliation and belonging (Hispanic \(M = 3.33 (SD = .63)\), Anglo \(M = 3.10 (SD = .79)\), \(t(109) = 3.16, p < .01, eta^2 = .08\), ethnic identity achievement (Hispanic \(M = 2.97 (SD = .57)\), Anglo \(M = 2.55 (SD = .55)\), \(t(110) = 3.96, p < .01, eta^2 = .12\), and ethnic behaviors (Hispanic \(M = 2.96 (SD = .93)\), Anglo \(M = 2.35 (SD = .94)\), \(t(110) = 3.47, p < .01, eta^2 = .10\) than the Anglo respondents (See Table 3). This is consistent with other studies who find the same pattern of differences between Hispanic/Latino and Anglo respondents\(^11\).

Interestingly, Ethnic Identity was not associated with either of the major dependent variables. For example, the zero-order correlations between Ethnic Identity and the ATMHT scale was -.08 for Hispanics (\(n = 56\)) and -.06 for Anglos (\(n = 50\)) and between Ethnic Identity and the ATSPH scale was .02 for Hispanics (\(n = 50\)) and .17 for Anglos (\(n = 51\)) (all correlation coefficients were not statistically significant). Although Ethnic Identity behaved in psychometrically sound ways with our sample (Cronbach’s alpha for Hispanics was .79, for Anglos .78), it was not a predictor of attitudes toward mental health seeking behaviors.

**DISCUSSION**

Our results suggest some good news concerning access to mental health for the elderly, regardless of ethnicity. In comparison to the response patterns found in the original samples using both scales, our samples had quite positive attitudes toward mental health treatment and seeking psychological help. These results are in line with recent research indicating that Americans’ attitudes toward mental health treatment are becoming slightly more favorable\(^4\). However, this is complicated by how the attitudes are measured\(^31\).

There are many factors which could influence the likelihood of senior citizens accessing mental health services. These include the inability to pay for services, the lack of transportation, family attitudes, negative attitudes toward mental illness and many others. Nevertheless, our respondents did not report difficulty accessing their medical services. Both Anglo and Hispanic respondents overwhelmingly reported that it was not difficult to get to a doctor’s office. Although the majority of our sample had not ever utilized a mental health professional, their responses to the ATMHT and ATSPH scales indicate that they would if they believed it was necessary. This is an impor-
tant first step in being able to provide mental health services to the public.

We were also pleased to see that in our sample we found very few differences between Hispanic and Anglo individuals in terms of their obstacles to accessing mental health services. The only major difference we found were the scores on the ATMH scale. Although this scale is highly correlated with the ATSPH scale ($r = .47 (p < .01$ in our sample), it is not synonymous. From the original article, the ATMH scale was primarily concerned with “attitude concerning the acceptability and treatability of psychiatric symptoms.” Whereas Fischer and Farina state “The attitude-belief construct identified by [the abbreviated version of the ATSPH scale] defines willingness to seek help from mental health professionals when one’s personal-emotional state warrants it.” Therefore although these two scales measure related constructs, they are hardly identical. It could be that Hispanic respondents were a bit more distrustful of seeking psychological help, although research in this area has been mixed.

All research projects such as this have limitations, and ours is no exception. The translation to the Spanish-speaking participants (although there were very few) should have been standardized and an error was made when several of the participants did not indicate their sex on the form. Senior centers can restrict the sample somewhat, although any sample of seniors is bound to have some restrictions in terms of generalizability.

In summary, attitudes towards mental health treatment may be an important indicator of a willingness to seek treatment and appear to be influenced by a complex number of factors. While there have only been a handful of studies that have looked at the elderly and their access to mental health services, the results of this study suggest that the seniors in our sample have a relatively positive feeling toward seeking psychological help should the need arise.

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REFERENCES

Municipal Bicycle Share Program Users, Uses, and Effects: View from San Antonio, Texas

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2Department of Kinesiology and Health Education, University of Texas at Austin

ABSTRACT

Background: Bicycle share programs, potential facilitators of physical activity in the form of recreational or transportation cycling, are increasing in popularity. The purpose of this study was to describe members of a newly (2011) implemented program in San Antonio, Texas, and compare their cycling frequency and trip types before and after joining. Demographic variations in cycling behaviors and reasons for joining were also assessed.

Methods: Historical cross-sectional internet survey of program members in 2012. Participants reported on both current and pre-membership cycling behaviors.

Results: The proportion of female respondents was lower but similar to the overall population (47% vs. 52%). Relative to the San Antonio population, respondents were more likely to be white and live in higher-income households (white population: 71% vs. 26%). Across gender and ethnic subpopulations, greater proportions reported cycling weekly, and cycling for transportation to non-work destinations, after versus before joining the bicycle share program (weekly cycling: 83% vs. 49%, p<0.001; transport cycling: 66% vs. 39%, p<0.001). Among non-whites, a greater proportion reported recreational cycling via the bicycle share program than reported recreational cycling in the year prior (80% vs. 51%, p=0.01). Men were more likely than women to have joined in order to increase transportation options (80% vs. 51%, p<0.001) and because of concerns for the environment (41% vs. 27%, p<0.05). Women were more likely than men to have been prompted to join by someone they knew (43% vs. 26%, p=0.03). Non-whites were more likely to join as a way to save money on transportation than were whites (34% vs. 14%, p=0.004).

Conclusion: Results suggest participants cycled more after joining the bicycle share program than before joining, particularly for transportation trips to non-work destinations. Demographic characteristics may distinguish membership in bicycle share programs, but not patterns of usage among members. Recommendations for future research are given.

BACKGROUND

Regular overall physical activity reduces the risk of chronic disease and premature death.1 By providing convenient access to bicycles in densely-populated areas, municipal bicycle share systems are potential facilitators of physical activity in the form of recreational or transportation cycling.2 Bicycle share systems make bicycles available for public use via distribution stations.1 For a fee, a bicycle can be used for a specified time period and returned to any distribution station with an open dock. Modern systems employing technology to monitor system bicycles have proliferated in recent years.3 As modern bicycle share programs are a relatively new phenomenon, research on users and usage is limited.

Two peer-reviewed studies on the effects of the Montreal, Canada, BIXI bicycle share system have been published.4,5 BIXI launched in 2009 with 450 stations and 5000 bicycles, available from May through November. A cross-sectional phone survey of 2,502 adult Montreal residents after the first BIXI season found 8.2% of respondents reported using BIXI at least once.4 A longitudinal study found that those living within a 500-meter road network buffer of a BIXI station were more likely to cycle for at least ten minutes/week after BIXI installation than before, relative to those not exposed.5

TPHA Journal Volume 66, Issue 3

To understand the effects and uses of bicycle share systems, studies are needed in a variety of geographic and population contexts. San Antonio, Texas, a large and ethnically-diverse city in the southern US, became home to a bicycle share system (San Antonio B-cycle or SA B-cycle) in 2011.6 The purpose of this study was to describe members of the newly implemented program in San Antonio and compare their cycling frequency and trip types before and after joining. This study also compared cycling behaviors and reasons for joining across gender and race/ethnicity.

METHODS

Study Design and Population

This cross-sectional study of the members of the San Antonio bicycle share program was approved by the Institutional Review Board of the University of Texas Health Science Center in Houston. At the time, San Antonio B-cycle had been operational for 18 months, with 25 stations in the downtown area. In November 2012, all members with valid email addresses on file with San Antonio Bike Share (SABS), the non-profit organization that manages San Antonio B-cycle, were invited to take an online survey. Potential participants were contacted three times. Of the 1,218 people invited, 160 completed survey (13%).

Instrumentation and Measures

The survey was developed in collaboration with SABS and City of San Antonio staff, utilizing questions from existing surveys.7,8 Respondents reported demographic characteristics and the nearest intersection to their home and workplace, reasons for joining and the benefits they have experienced, and cycling frequency before and after joining SA B-cycle and via SA B-cycle. Respondents reported whether they had cycled for recreation or for transportation (to get to a destination) by the type of destination (public transit stop, work or school, or another destination such as shopping, dining, or to visit a friend) in the year before joining SA B-cycle and if they had via SA B-cycle. Respondents were asked what transportation mode they would have used on their most recent SA B-cycle trip if SA B-cycle had not been available.

Analysis

Distances to the nearest SA B-cycle station from home and workplace via road networks were assessed using ArcGIS 10.1 (Environmental Systems Research Institute, Inc. (ESRI), Redlands, California). Statistical analyses were carried out using Stata 11.2 (StataCorp, College Station, Texas). Chi square tests were used to assess differences in reasons for joining SA B-cycle, and McNemar’s tests were used to assess differences between behaviors prior to and after joining B-cycle.

RESULTS

Characteristics of SA B-cycle members. Demographic characteristics are shown in Table 1. More than half of the respondents were male. The age category with the largest proportion was 30-39 years. A majority was white and about one-quarter was Hispanic. Forty percent reported annual household earnings of $95,000 or more, and 19% lived in households earning less than $40,000 annually.

By comparison, the San Antonio adult (18 and over) population in 2012 was 52% female, with 26% of adults aged 18-29 years, 22%...
aged 60 years or older, and 17% aged 50-59 years.9 San Antonio’s 2012 population was 26% non-Hispanic white and 64% Hispanic, with 38% living in households earning under $40,000 annually.10

At the time of the survey, 64% of respondents owned a bike. Seventy percent worked within 0.5 miles and one-third lived within 0.5 miles of a station. Close to half rode a bike weekly in the year before joining, and a majority reported using B-cycle at least once in a typical week.

External prompts and personal motivations for joining SA B-cycle. Results on reported external prompts and personal motivations for joining are shown in Table 2. Thirty-eight percent selected more than one prompt from a choice of six. More than half selected “Seeing a B-cycle station or seeing someone riding a B-cycle” and one-third selected “A friend/ family member/ co-worker.” These top two choices were the same among the 62% that selected only one prompt. From a set of seven personal motivations for joining, 81% selected more than one. The most frequently selected option was “Fun”, followed by “Increase transportation options.” Exercise was also a factor for a majority.

Subpopulation differences were found. Men were more likely than women to have joined in order to increase transportation options and because of environmental concerns. More women than men were prompted to join by someone they knew. Non-whites were more likely than whites to join as a way to save money on transportation.

Cycling frequency and cycle trip purposes. Results on reported cycling behaviors are shown in Table 3. Less than half biked weekly before joining SA B-cycle. Overall and among gender and racial/ethnic subpopulations, a significantly greater proportion reported that they currently cycled weekly than reported that they cycled weekly prior to joining.

The overall proportion of respondents who reported using SA B-cycle for a recreational trip was similar to the proportion reporting a recreational cycling trip in the year prior to joining. Among non-whites, a greater proportion reported recreational cycling using SA B-cycle than in the year prior to joining. A greater proportion reported using SA B-cycle for a transportation trip than reported using a bicycle for transportation in the year prior to joining, and this difference was seen across subpopulations (data shown in Table 3). Transportation cycling trips by destination are shown in Figure 1. A larger proportion reported using SA B-cycle for a non-work, non-transit trip, than reported doing so in the year prior to membership.

Travel mode replaced by SA B-cycle. Respondents were asked what mode of transportation they would have used instead of SA B-cycle on their most recent SA B-cycle trip, if the bicycle share program did

Table 1. Characteristics of San Antonio B-cycle® membership survey respondents:
San Antonio, Texas, 2012

<table>
<thead>
<tr>
<th></th>
<th>San Antonio B-cycle members</th>
<th>San Antonio populationb</th>
<th>%</th>
<th>%</th>
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<tr>
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<td>Rode bike in year before joining</td>
<td>113</td>
<td>72.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rode bike at least once/week before joining</td>
<td>78</td>
<td>48.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ride SA B-cycle at least once/week</td>
<td>114</td>
<td>71.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* San Antonio B-cycle is the name of the bicycle share system in San Antonio, TX.

* Data source: 2012 US Census American Community Survey, 1-year estimates; data for age and sex are for adult population (over 18 years old) only.

* Census data not available for these specific income categories.
The most frequent response was car, followed by walking. Thirteen percent reported they would not have taken the trip at all.

**DISCUSSION**

This cross-sectional study utilizing a survey of the San Antonio’s bicycle share program membership assessed demographics and reasons for joining and current and pre-membership cycling behaviors. Results suggest that participants increased their cycling frequency, particularly for transportation to non-work destinations, after joining the bicycle share program. The results of this study in an ethnically-diverse, southern US city supports a potential relationship between bicycle share programs and physical activity.

As found in other bicycle share member surveys, the SA B-cycle membership was disproportionately white and affluent relative to the larger population. A 2012 report on public bike sharing in North America featuring surveys of users in four cities found 15% of respondents earned less than $35,000 while 35% earned over $100,000 annually.11 Seventy-nine percent were non-Hispanic white, 4% were Hispanic, and 2% were non-Hispanic black. These results suggest that work is needed to identify and remove barriers to bicycle share membership for lower-income and minority populations. Although there were no differences between white and non-white participants in the prompts that led them to join SA B-cycle, non-whites were more likely to join as a way to save money on transportation, suggesting that relative cost of bicycle share versus other transportation options may be an important consideration for this population.

Consistent with prior findings, the proportion of participating members who were female was similar to that in the general population. The Washington, DC, bicycle share membership report found 45%

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**Table 2. External prompts and personal reasons for joining the San Antonio B-cycle by sex and race/ethnicity: San Antonio, Texas, 2012**

<table>
<thead>
<tr>
<th>EXTERNAL PROMPTS TO JOIN</th>
<th>Total (n=160)</th>
<th>Sex (n=158)</th>
<th>Race/Ethnicity (n=158)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Non-white</td>
<td>White</td>
</tr>
<tr>
<td>Seeing a B-cycle station or someone riding a B-cycle</td>
<td>51%</td>
<td>56%</td>
<td>45%</td>
<td>0.16</td>
</tr>
<tr>
<td>A friend/ family member/co-worker</td>
<td>34%</td>
<td>43%</td>
<td>26%</td>
<td>0.03</td>
</tr>
<tr>
<td>Media Coverage</td>
<td>21%</td>
<td>26%</td>
<td>16%</td>
<td>0.13</td>
</tr>
<tr>
<td>Website, blog or other online source</td>
<td>19%</td>
<td>20%</td>
<td>18%</td>
<td>0.71</td>
</tr>
<tr>
<td>Attended an informational meeting</td>
<td>11%</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Demonstration at an event</td>
<td>10%</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

**PERSONAL REASONS FOR JOINING**

| Fun | 72% | 75% | 69% | 0.46 | 77% | 70% | 0.37 |
| Increase transportation options | 66% | 51% | 80% | <0.001 | 64% | 68% | 0.64 |
| Exercise | 55% | 61% | 49% | 0.13 | 66% | 51% | 0.09 |
| More convenient than driving and parking | 54% | 47% | 61% | 0.07 | 55% | 54% | 0.99 |
| Concerns for the environment | 34% | 27% | 41% | 0.05 | 34% | 33% | 0.93 |
| Try out cycling | 25% | 27% | 24% | 0.65 | 30% | 24% | 0.45 |
| Save money on transportation | 19% | 13% | 25% | 0.07 | 34% | 14% | 0.004 |

*Not enough data available to provide a meaningful estimate. Respondents could select more than one external prompt and more than one personal reason for joining; therefore sum of percentages total more than 100%.

**Table 3. Differences in current and pre-membership cycling by sex and race/ethnicity among San Antonio B-cycle members: San Antonio, Texas 2012**

<table>
<thead>
<tr>
<th>weekly cycling</th>
<th>transport cycling</th>
<th>recreational cycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>prior to joining</td>
<td>current</td>
<td>p-value</td>
</tr>
<tr>
<td>Overall</td>
<td>49%</td>
<td>83%</td>
</tr>
<tr>
<td>Whites</td>
<td>52%</td>
<td>84%</td>
</tr>
<tr>
<td>Non-whites</td>
<td>42%</td>
<td>81%</td>
</tr>
<tr>
<td>Males</td>
<td>53%</td>
<td>82%</td>
</tr>
<tr>
<td>Females</td>
<td>45%</td>
<td>85%</td>
</tr>
</tbody>
</table>

As found in other bicycle share member surveys, the SA B-cycle membership was disproportionately white and affluent relative to the larger population. A 2012 report on public bike sharing in North America featuring surveys of users in four cities found 15% of respondents earned less than $35,000 while 35% earned over $100,000 annually.11 Seventy-nine percent were non-Hispanic white, 4% were Hispanic, and 2% were non-Hispanic black. These results suggest that work is needed to identify and remove barriers to bicycle share membership for lower-income and minority populations. Although there were no differences between white and non-white participants in the prompts that led them to join SA B-cycle, non-whites were more likely to join as a way to save money on transportation, suggesting that relative cost of bicycle share versus other transportation options may be an important consideration for this population.

Consistent with prior findings, the proportion of participating members who were female was similar to that in the general population. The Washington, DC, bicycle share membership report found 45%
of Capital Bikeshare users were female,7 and BIXI users were as likely to be female as male.4 This gender balance stands in contrast to the population of regular cyclists in the US. According to the US Census Bureau’s American Community Survey, in 2009 (the most recent year for which these data are available), 75% of commuter cyclists were male.12 A study of overall cycling found that in 2009 men were 3.8 times more likely to cycle for 30 minutes per day than were women.13 If bicycle share membership is close to half female, they may facilitate access to cycling among women.

Overall, respondents were fairly experienced cyclists, with close to half cycling weekly prior to joining. However, 27% had not ridden a bike in the year prior to joining, and 36% did not own a bicycle. These results suggest that SA B-cycle may also be reaching a population of inexperienced cyclists, or perhaps people who are returning to cycling.

Results suggest that annual members of SA B-cycle may have increased their cycling after joining SA B-cycle. Across gender and ethnic subpopulations, significantly more members reported current weekly cycling than reported weekly cycling before joining. The largest reported increase was in cycling for transportation, although non-white members had a significant increase in both transportation and recreational cycling. While the non-white population was disproportionately under-represented among bicycle share membership, those that joined experienced significant increases in cycling.

The most popular types of transportation cycling trips taken by SA B-cycle were to non-work destinations such as trips to visit friends, go shopping, or eat out. Sixty-four percent of respondents had taken such a trip using SA B-cycle, compared to 21% who said they had ever used SA B-cycle to get to work. By contrast, 38%-56% of bicycle share users in the Mineta Transportation Institute (MTI) study said their most common purpose for using bicycle share was going to work or school.11 The prevalence of bicycle commuting in San Antonio is quite low (0.3% in 2011)14 compared to the cities in the MTI study: Montreal and Quebec (1.7% and 1.3%, respectively),15 Washington, DC, and Minneapolis, MN (3.1% and 3.4%, respectively).14 Only 34% of respondents lived within 0.5 miles of a SA B-cycle station, making commuting by B-cycle impractical for the majority. The relative lack of reported commuter cycling via SA B-cycle, and the low overall commuter cycling rate in the city, may reflect characteristics of San Antonio. Cycling between residential and employment areas may not be well-supported by cycling infrastructure, and SABS may be concentrating its stations in areas with the greatest access to safe cycle routes.

This study is one of the first to report on characteristics of bicycle share members, uses of bicycle share, and the effects of membership in a bicycle share program, and utilizes a population of bicycle

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share members in a southern city with a diverse population and low rates of commuter cycling. Weaknesses of the study include its low response rate (13%), which limits generalizability to the overall SA B-cycle population. However, this rate is similar to those obtained in the four bicycle share system membership surveys conducted for the MTI study (overall response rate 15%). Importantly, the cross-sectional design precludes causal inference. Given the lack of published research in this area, it provides an early look at the potential effects of bicycle share programs on physical activity behaviors.

Future research should measure bicycle share effects with longitudinal studies and test promotional strategies to increase system use and diversity. Tailored promotional campaigns to promote transportation cycling among bicycle share members should be developed based on categories such as stage of transportation cycling adoption. Combining individually-oriented behavior change with environmental changes such as new bicycle share systems may help accelerate an increase in physical activity and active transportation. Identifying membership barriers and motivations among low-income and non-white populations will help ensure benefits of bicycle sharing are experienced population-wide.

Acknowledgements
The authors wish to thank Julia Murphy of the City of San Antonio Office of Sustainability and Cynthia Snell of San Antonio Bike Share, as well as their staff, for their invaluable contributions to developing and administering the survey and reviewing manuscript drafts. During this study, EN was supported as a Dell Scholar predoctoral fellow, funded by from the Michael & Susan Dell Foundation.

REFERENCES
Cyberbullying at a Texas University - A Mixed Methods Approach to Examining Online Aggression

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\(^2\)University of Texas at Arlington, Center for Distance Education, Arlington, TX

ABSTRACT

**Objective:** Cyberbullying is characterized by utilizing digital technology repeatedly to purposefully send information about another person to inflict harm. The objective of this mixed-methods study was to identify the prevalence for victimization and bullying behaviors, as well as to examine undergraduate students’ perceptions and experiences with cyberbullying.

**Participants:** This study was conducted from 2011 to 2012 among undergraduate students at a Texas university (N = 286).

**Methods:** Prevalence of cyberbullying victimization/offending behaviors, and demographic variables were measured. Open-ended questions inquiring about personal cyberbullying experiences were included.

**Results:** Cyberbullying typically occurred through text message, email, and social networking sites. Approximately 32.4% of participants experienced at least two types of victimization and 16% of the study population reported victimizing others in two or more ways. Participants indicated that they were often cyberbullied due to relationship break-ups or disagreements in the dormitory. Behavioral impacts such as avoiding new friends and not trusting others were reported, as well as emotional reactions such as suicide ideation.

**Conclusions:** Administrators and faculty should focus on changing the campus culture to promote prevention, intervention, and enforcement of cyberbullying.

**Key Words:** cyberbullying, college students, mixed-methods, digital technologies, cyberstalking

INTRODUCTION

“*My boyfriend’s ex-wife relentlessly texts me 15 times per day, leaves multiple voice messages on my phone, and has even stalked me at college.*”

Cyberbullying victimization is becoming a significant issue related to how society increasingly utilizes digital technologies to communicate. According to a study among college students, 21.9% of participants reported being cyberbullied which included disseminating inappropriate pictures of someone or spreading information to harm another person’s reputation or well-being.\(^1\) Bullying occurs via digital means for several reasons, such as to intimidate and gang up on others, or even for a good laugh. While some cyberbullies may be unaware of the harm they inflict on others, research suggests that these actions can be damaging to the psychological health for victims and the bullies.\(^2,3\)

According to prominent research, students have historically experienced various forms of bullying while in school, ranging from name calling to physical abuse to emotional taunting.\(^4,5\) While traditional bullying in school often transpires in a face to face setting characterized by a bully who is bigger and stronger than the weaker victim, cyberbullying is not necessarily defined by physical traits and can take place anonymously leaving the victim wondering who was behind the attack.\(^6\) This type of behavior is characterized by utilizing digital technology repeatedly to purposefully send information about another person to inflict harm.\(^7,8\) Overcoming the idea that cyberbullying only occurs among younger students is necessary to better understand what older students may silently endure while they are pursuing higher education.\(^9,10\) Increasingly, university professional preparation programs are moving from a traditional classroom to an online learning environment.\(^10\) Moreover, social networking sites such as Facebook are not only used for recreation, but may also be used to enhance or deliver portions of college classes.\(^11\) Understanding that more college classes are moving online, it is critical to examine whether this may increase the likelihood for students to engage in cyberbullying behaviors.

While the majority of cyberbullying research has occurred among K-12 students,\(^12-16\) there is a paucity of research studies available examining how college students view and experience cyberbullying. An exploratory study conducted among undergraduates to determine the extent of cyberbullying, found that a large percentage of the participants knew someone who was cyberbullied.\(^17\) In another study, college students (< 25 years old) experienced cyberbullying more so than older students, especially if they were cyberbullied in high school.\(^7\) Similarly, one study identified certain students were likely to be bullies or victims throughout elementary, high school and college indicating that these behaviors and tendencies may persist throughout one’s educational journey.\(^18\) Unfortunately, long-lasting repercussions due to cyberbullying may be problematic. Recent evidence indicates that cyberbullying among college students is associated with psychological damage, such as phobias, anxiety, depression and suicide ideation.\(^19\)

Additional research is warranted to further contribute to the knowledge base and expand our understanding of how college students utilize the Internet in ways that may lead to aggression and hostile experiences. The purpose of this mixed-methods study was to identify the prevalence for victimization and bullying behaviors, as well as to examine undergraduate students’ perceptions and experiences with cyberbullying.

METHODS

**Participants**

This study was conducted during the academic school year from 2011 to 2012 among undergraduate students at a Texas university. Participants (N = 286) needed to be classified as either first-year or second-year students to be eligible for the study. Students in their first years of college were sought because they are more likely to live on campus and in community with other students when cyberbullying may be more pervasive. In order to recruit potential participants, the researchers obtained a list of eligible students from the IT department. These students were contacted by email and informed about the online survey. We also used other strategies for recruitment, such as announcements from within classes and advertisements posted within the university registration system. When potential participants clicked on the survey link administered via Survey Monkey, a cover letter appeared with a description of the study, benefits/risks of participating, and acknowledgment that their responses were anonymous. If students agreed to join the study, they clicked on the link to view the survey items. Participants had the option to register for a drawing after completing the survey in order to win an Amazon gift card. This study was approved by the university Institutional Review Board (IRB).

**Instruments**

To measure cyberbullying behaviors from both the victim and bully standpoint, we included instruments to address each perspective.
Both instruments were designed by Hinduja & Patchin and have established validity and reliability. The first instrument, *Prevalence and Type of Cyberbullying Victimization*, was utilized since it consists of 9 different forms of aggression. The instrument was designed to examine the victim’s experience at the macro-level and contains some basic offenses (e.g., received an upsetting email or instant message) to more serious ones. Each item is worth up to 4 points based on the frequency of cyberbullying (Never = 0; Once or twice = 1; A few times = 2; Many times= 3; Everyday = 4), and the instrument is scored by taking the sum which ranges from 0 to 36 (Cronbach’s α = .74).12 Another instrument entitled *Prevalence and Type of Cyberbullying Offending*, examines the participation in 5 types of online aggression (e.g., posting pictures of another person online to make others laugh) (Cronbach’s α = .76).8 Similarly, each item is worth up to 4 points based on the frequency of being a cyberbully (Never = 0; Once or twice = 1; A few times = 2; Many times= 3; Everyday = 4), and the instrument is scored by taking the sum which ranges from 0 to 20. Higher values on each cyberbullying instrument indicate more experience with being a bully and/or a victim. Finally, the researchers developed a short demographics survey to identify information about the study population, such as age, ethnicity, sex and social media usage.

**Statistical analysis**

Analyses were conducted using IBM SPSS Statistics, Version 19 and evaluated at the 5% level of significance. Measures of central tendency were used to describe the sample on the continuous variables (i.e., age), while frequencies and percentages were used to describe the categorical variables (e.g., ethnicity). A series of ANOVAs were performed on victimization and offending scores to determine any differences on race/ethnicity, class format, GPA, and Facebook frequency.

**Qualitative responses**

Open-ended questions were also included to gain more insight into participants’ experiences with cyberbullying. Participants were asked if they had been previously cyberbullied while in college and the perceived reasons behind the attack. The resulting data were analyzed by deductive and inductive methods, where each researcher independently examined the data from the responses as well as reviewed the current findings published in the literature. One of the researchers analyzed the data by hand (MC) and the other researcher (KC) used HyperResearch Software version 3.0.3. Codes were assigned to key phrases and were in constant comparison with other passages throughout the analysis.20 Emerging themes were then identified after the codes were organized hierarchically according to the research questions, “What were the perceived reasons for cyberbullying?” and “How did it make you feel?” Once the analysis was complete, the researchers discussed the findings and came to a consensus on any discrepancies that resulted from each independent review. The interrater reliability score was an acceptable 90%, according to the literature.21

**RESULTS**

As shown in Table 1, the majority of the sample was female (93%). First-year (49.4%) and second-year students (50.6%) were equally represented in the sample. Approximately 39.4% of the sample was Caucasian, Hispanic (24.6%), or African-American (22.9%). The vast majority of participants had a GPA of 3.0 or higher. When asked about their technology usage, most students reported using a cell phone daily (97.6%), as well as daily use of Facebook (76.3%). The age of the students ranged from 18 to 53 years with a mean of 21.9 (SD = 8.7). The ANOVAs revealed no significant differences between groups on victimization and offending scores influenced by race/ethnicity, class format, GPA, and Facebook frequency.

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Percentage</th>
<th>S.D.</th>
<th>Mean</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-22</td>
<td>214</td>
<td>81.7</td>
<td>8.7</td>
<td>21.9</td>
<td>Under 2.5</td>
<td>21</td>
</tr>
<tr>
<td>23-30</td>
<td>25</td>
<td>9.5</td>
<td>9.5</td>
<td></td>
<td>2.5 to 2.99</td>
<td>72</td>
</tr>
<tr>
<td>31-53</td>
<td>23</td>
<td>8.8</td>
<td>8.8</td>
<td></td>
<td>3.0 to 3.49</td>
<td>76</td>
</tr>
<tr>
<td>Missing</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td>3.5 to 3.9</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.0</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Missing</td>
<td>4</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Class Format</td>
<td>207</td>
</tr>
<tr>
<td>Female</td>
<td>264</td>
<td>93.0</td>
<td></td>
<td></td>
<td>Face to Face</td>
<td>13</td>
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<tr>
<td>Male</td>
<td>20</td>
<td>7.0</td>
<td></td>
<td></td>
<td>Online</td>
<td>64</td>
</tr>
<tr>
<td>Missing</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>Both</td>
<td>64</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanics</td>
<td>70</td>
<td>24.6</td>
<td></td>
<td></td>
<td>Missing</td>
<td>2</td>
</tr>
<tr>
<td>Caucasians</td>
<td>112</td>
<td>39.4</td>
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<td></td>
</tr>
<tr>
<td>African American</td>
<td>65</td>
<td>22.9</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Asian</td>
<td>27</td>
<td>9.5</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>3.5</td>
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<tr>
<td>Missing</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Facebook Frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>18</td>
<td>6.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>213</td>
<td>76.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly</td>
<td>34</td>
<td>12.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly</td>
<td>14</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
According to the victimization survey, over 50% of the participants reported that they had received an upsetting email and a text from someone they know. Additionally, 32.4% of participants reported experiencing at least 2 of the victimization behaviors described in the survey. A portion of participants were also involved in Facebook wall posts that were distressing, as well as had pictures or content posted on other websites that they did not want people to see (Table 2). The overall score for victimization ranged from 0 to 20 (Mean = 4.2; SD = 4.3) indicating there was some victimization, but it did not occur frequently for the majority of participants.

Participants reported on their experiences with cyberbullying when interacting with other college students. The most prevalent form of cyberbullying was to post a picture or story online about another person to invoke a laugh (31.8%). Other forms of cyberbullying included posting on a website to make another person angry (17.1%) or taking a picture and posting it without permission (19.5%) (Table 3). Approximately 16% of participants reported that they committed at least two of the offending behaviors listed in the survey. The overall bullying score ranged from 0 to 12 (Mean = 1.4; SD = 2.2), indicating that acting as a bullying was infrequent. Interestingly, 31 participants indicated that they had suffered as a victim and also operated as a bully.

**Qualitative Findings**

As noted in Figure 1, data collected from the open-ended questions illuminated reasons for a cyberbullying attack, as well as specific ways in which the victim coped as a result. Approximately 24 participants reported personal experiences with cyberbullying and 54% discussed the situation with another person after the victimization (n = 13).

**Threats of violence & personal attacks.** When asked about the reason for cyberbullying, 5 participants reported that cyberbullying occurred after a romantic relationship ended. Several of these break-ups were violent in nature, as one participant stated an “angry ex-boyfriend made late night calls and sent MySpace messages that were hateful and vulgar.” Additionally, friends of the ex-boyfriend/girlfriend were reported to “gang up” or carry out threats to the participants in the study. For instance, one person said “a female friend of my ex was upset with me for ending the relationship, which hurt her friend, threatened to kill me.” In another occurrence, someone reported that she “was sexually assaulted and friends of my rapist started harassing me when I pressed charges.” There were also personal attacks resulting from other relationships, such as dormitory roommates (n = 3), friends/acquaintances (n = 8), old friends from high school (n = 1), and anonymous stalkers (n = 3). For instance, someone reported that her roommate conveyed dislike of her to other friends and “they started doing mean pranks, posting nasty messages on Facebook and calling my phone and leaving prank messages, all to please the other roommate.”

**“Tagging” using Social Media.** Facebook was a prevalent platform to cyberbully others as several participants reported that they received negative comments on their walls or connected to pictures that were posted to their account. When someone is tagged in a post, this action calls attention to that particular post and the person’s friends can also see what was posted. Participants experienced cyberbullying from people who uploaded negative pictures and tagged them in it. For example, someone wrote that “they uploaded a drawn picture of me with profanities written on it to describe me. Then, they tagged me in the picture for other people to see.”

Cyberbullying on Facebook can be humiliating for some people since it is a semi-open forum whereby friends and family can potentially become involved in these types of scenarios. One person said “people from high school just do not like me and never have so they started to attack me on my Facebook and pretty much ganged up on me with all their friends…. They left nasty comments on the pictures that were inappropriate especially since my family is on my Facebook.”

| Table 2. Prevalence of Cyberbullying from Victimization Scale |
|------------------|------------------|
|                  | N    | %    |
| Received an upsetting e-mail from someone you know. | 133  | 55.2 |
| Received an instant message that made you upset.     | 160  | 50.3 |
| Had something posted to a Facebook group or on your Facebook wall that made you upset. | 128  | 40.2 |
| Been made fun of in a chat room.                      | 33   | 10.8 |
| Received an upsetting e-mail from someone you did not know (not spam). | 48   | 15.4 |
| Had something posted about you on another Web page that made you upset. | 66   | 23.0 |
| Something has been posted about you online that you did not want others to see. | 103  | 34.2 |
| Been picked on or bullied online.                     | 59   | 19.6 |
| Been afraid to go on the computer.                    | 23   | 7.3  |

*Note. Frequencies and percentages represent the participants who have ever experienced the behavior.*
Avoided new friendships. Unfortunately, 5 participants became guarded and less likely to develop friendships as a result of being cyberbullied. For instance, one person reported, “I did not want to talk to new people for anything but casual friendship that didn’t extend past the classroom, and found it very hard to give out my number or Facebook to people.” This type of response can facilitate isolation and hinder social development instead of building more connections in preparation for future careers. Another person reported, “My trust for people was also affected because I was feeling attacked by everyone after that.”

Emotional reactions. Some situations were very serious where 4 participants reported extreme sadness as a result of being cyberbullied. For instance, one person reported, “I did not want to talk to new people for anything but casual friendship that didn’t extend past the classroom, and found it very hard to give out my number or Facebook to people.” This type of response can facilitate isolation and hinder social development instead of building more connections in preparation for future careers. Another person reported, “My trust for people was also affected because I was feeling attacked by everyone after that.”

More awareness of others & overcoming. Interestingly, there were a few positive reactions after becoming a cybervictim. Some participants stated that they became more aware of how they treated others and therefore made attempts to avoid hurting people’s feelings. While some participants were very hurt by cyberbullying, one person said, “I rose above it. Once they realized I wasn’t going to retaliate, it seems that they stopped.” The hurtfulness of this behavior was dependent on who was sending the messages. According to a participant, “some messages were lame so I didn’t pay attention, others from exes were hurtful and definitely rendered an emotional response.”


DISCUSSION

In this study, 16% of participants admitted to engaging in two or more cyberbullying activities while in college, and it appears that this behavior was intentional as a way to either make others laugh or to take revenge on another person (i.e., posting pictures or sending inappropriate texts). Similar results were reported in that cyberbullying behavior was a form of entertainment, in addition as way to get back at others.22 Furthermore, some people are even bolder online as opposed to in person and may be prone to bullying each other more aggressively. As noted by researchers cyberbullies may lack empathy for others when they are unable to see visual cues resulting from the messages that are sent.23

Some participants acted as a cyberbully and a victim, and this supports the notion that there are not “pure” bullies or victims, but rather a “victim-bully” phenomenon where it is likely that people retaliate once they are victimized. In the open-ended responses, one participant reported that she ignored the hurtful messages from others, unless it was from an ex-significant other. In order to avoid becoming a bully after being victimized, college students may require more support and training on how to manage relational difficulties with good communication skills. Techniques on how to diffuse tense situations with others may be useful to reduce the ongoing “bully-victim” relationship dynamic.

The prevalence instrument indicated that certain behaviors, such as receiving upsetting instant messages, emails, and Facebook posts, may be associated with victimization experiences. In order to be proactive before situations escalate, it is necessary to better understand how the communication break-down occurs in relationships. Many of the participants were negatively impacted as a result of cyberbullying, and reported difficulty trusting people after being victimized. The emotional upheaval as a result of cyberbullying afflicted several of the participants, and our findings aligned with another study in which victims avoided new relationships as a coping mechanism.19 Some participants who had experienced a recent break-up also received extremely violent threats which escalated into cyberstalking. However, there were some participants that were not impacted or who viewed the situation in a positive light by growing from the experience. Since it is necessary to possess coping skills in order to manage cyberbullying,24,25 perhaps some students were better equipped than others.

Limitations

Cyberbullying is an under-observed phenomenon in the college setting. This study has demonstrated that college students may face emotional and physical harm as a result. Specific participants were greatly impacted by cyberbullying and these findings may be used to direct appropriate counseling services on college campuses. As in all research studies, there were some limitations. Participants self-selected to join the study, and we do not know if they are different from the students who chose not to participate. Also, the university where the study was conducted draws non-traditional students with the majority being female. Some of the participants were much older than typical college-age students. For these reasons, the results may not be generalizable to a larger population.

CONCLUSIONS

Because technology is constantly changing, revisions to instruments that measure cyberbullying behaviors should be frequently revised in order to keep pace with emerging technologies. To expand upon the instruments employed in this study, researchers should conduct an assessment to determine the most widely used digital platforms (i.e., text, cell phones, SNS, etc.). Additionally, consideration should be given to how some forms of cyberbullying are more impactful than others, such as an impolite email versus a life threatening phone call.25 Creating a tool that weights different types of cyberbullying would be beneficial to determine more precisely how people are affected.

Social change is necessary to understand how cyberbullying occurs among college students before campus-wide policies can be developed to protect students.26 Future studies should be conducted at several Texas universities to develop a better understanding of cyberbullying. Administrators, faculty, and staff should focus on changing the campus culture – both online and in the physical classroom- to promote prevention, intervention, and enforcement of cyberbullying since this is a form of school violence that could potentially escalate into other incidences involving hazing, fighting, sexual violence, self-harm and suicide.27 Ultimately, scientific findings, university policies, digital citizenship and a greater awareness at the societal level are all key factors in preventing harm from cyberbullying.

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