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# Knowledge, Perceptions, Discrimination, Health Self-Efficacy, And Risky Behaviors For HIV/aids And Its Association With Migration Time Among Mixtec And Zapotec Men Who Migrate, 2012

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EFFICACY, AND RISKY BEHAVIORS FOR HIV/AIDS AND ITS  
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MIXTEC AND ZAPOTEC MEN WHO  
MIGRATE, 2012

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## **Dedication**

Dedicated to my kids, Christopher and Dafne, they continue to teach me every day how precious life is, how happiness is found in the little things, with every smile and every kiss they give me their unconditional love, could not have asked for a bigger inspiration in my life.

KNOWLEDGE, PERCEPTIONS, DISCRIMINATION, HEALTH SELF-  
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MIGRATE, 2012

by

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THESIS

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## **Abstract**

**BACKGROUND AND SIGNIFICANCE:** Historically, there has been a transnational migration flow from Mexico to the United States. There are many reasons for which people make the decision to migrate; the most common ones are unemployment and economic hardship. Currently, Oaxaca is considered one of the states with the highest poverty levels in Mexico. As a result of extreme poverty groups of indigenous people, such as Zapotec and Mixtec, are forced to migrate out of their communities in order to find jobs. Migration has been associated with various health outcomes, including diabetes, high blood pressure, and heart disease as well as negative effects on mental health. Evidence shows that upon their arrival to the U.S., Mexican immigrants tend to practice healthier behaviors than the Anglo-American population. However, acculturation has a negative impact on their lifestyle and consequently on their health. This situation puts them at risk for many chronic and infectious diseases, including HIV/AIDS. **STUDY AIMS:** The aims of this study are to (1) describe total migration time away; (2) describe sexual partners and condom use; (3) describe perceptions and discrimination towards HIV/AIDS, and health self-efficacy for HIV/AIDS; and (4) determine the association between migration time away from their community and knowledge, perceptions, discrimination, and health efficacy towards HIV/AIDS among adult Mixtec and Zapotec men who migrate within Mexico and to the United States. **METHODS:** This study is a secondary data analysis from a cross-sectional study completed in 2012 among Mixtec and Zapotec men who had migrated and now living in Oaxaca, OAX, Chihuahua, CHIH, or Vista, CA. Participants were interviewed using a structured questionnaire to assess the following measures: demographic characteristics, migration, sexual behaviors, access to goods and services, access to health care, risk perceptions knowledge, perceptions, discrimination, and health self-efficacy for HIV/AIDS. **RESULTS:** A total of 106 participants were interviewed. Participants' median total migration time away, the outcome of this study, was 8 years (range 5 months to 53 years). Of these, 70.8% identified as Mixtec with median age of 35

(range 19 to 79) years old. Most (71.7%) participants reported having no or elementary education. The primary reason reported for migration was for work (87.7%) and more than half (55.7%) reported currently working in activities involving agriculture. There were significant associations in time spent away by ethnicity ( $p$ -value=0.001), schooling ( $p$ -value=0.029), and marginally for work activities in the field ( $p$ -value=0.051). A vast majority of participants (90.0%) reported having sex with their stable partner in the last six months, among those, 76.1% reported never using a condom with their stable partner. No significant associations were detected between migration time and measures for sexual partners and condom use. The majority of participants (81.0%) believed that people who have HIV/AIDS have the right to be loved and cared by his/her family; have the same rights as those that do not have it (80.0%); and have the right to work (78.1%). There were significant associations between migration time away and participants' views on whether people with HIV are entitled to work ( $p$ -value=0.033) and children of people living with HIV/AIDS are entitled to attend school ( $p$ -value=0.006). There were no significant associations between migration time away and measures for HIV/AIDS and sexually transmitted infections (STI) knowledge. Most participants felt they had personal control over contracting HIV by agreeing to the following statements: it's up to you if you get HIV/AIDS (81.9%); if you adopt appropriate measures, you can avoid getting the HIV/AIDS virus (81.7%); and they agreed to in order for you to get infected with HIV/AIDS, it depends on your own actions (84.6%). **DISCUSSION:** Future studies should not only focus on the individual but instead should focus on contextual factors (e.g., social networks, policy, physical and social environment, etc.) as well as structural factors (e.g., poverty, economic crisis, etc.) beyond migration time away because alone it does not explain variability in independent variables. The main strength of the study is that this study is specific to Mixtec and Zapotec men as opposed to all Mexican migrants. Study limitations include: Interviewers were different per site; migration status was based on their current location; and, the analysis for migration time was not stratified in age group nor was it was not adjusted for age.



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## **Introduction**

Migration between Mexico and the U.S. dates back to 1848 when Mexican territory became part of the United States as a result of the treaties of Guadalupe Hidalgo<sup>1</sup>. However, there was a significant increase in migration flow in 1942, when the Bracero Program was first introduced<sup>2</sup>. The Bracero Program was a labor migration structure that opened the doors for Mexican nationals to enter the United States for labor purposes in the area of agriculture for cheap labor. “The demand for cheap labor is a crucial pull factor for labor migration”<sup>3</sup>. The Bracero Program concluded in 1964, though labor migration remains a reality today<sup>2</sup>. There is also migration within a country and Mexico is not an exception.

Despite the oppression that immigrants are placed into when they come to the U.S. to work, they still consider migrating because of the living conditions they face at home<sup>4</sup>. The minimum wage in Mexico is that of approximately \$63.07 Mexican Pesos (MXN) per day, equivalent to \$4.99 US dollars (USD)<sup>5</sup>. The average cost of a household per trimester (period of three months) for rent is \$366.10 USD (\$4,630 MXN); for food, \$618.42 USD (\$7,821 MXN); for transportation and communication, \$350.21 USD (\$4,429 MXN)<sup>6</sup>. Extreme poverty forces people to migrate, they often suffer from many limitations such as very limited job opportunities, no basic services (e.g., water, electricity, gas), underdeveloped infrastructures, poor schools, and poor access to healthcare among others<sup>4</sup>. There are a number of reasons for people to migrate to the U.S.; however, migration is, for the most part, due to their economic hardship<sup>7,8</sup>. Moreover, it is estimated that at least 24 million Mexicans live in extreme poverty, thus this economic situation prohibits people from providing basic necessities (e.g., housing, food, and medical care) to their families<sup>9</sup>. Some possible explanations for the extended economic struggle in Mexico are the family reunification, violence, and the North American Free Trade Agreement (NAFTA).

Immediately after the implementation of NAFTA in 1994, there was a large flow of low-cost agricultural products in the U.S. that resulted in the loss of more than 1.5 million farmers' small businesses in Mexico significantly affecting their agricultural economy<sup>3</sup>. Consequently, farm workers and other labor workers have increasingly migrated to urban areas within the country in seek of better labor opportunities. For those workers who are unable to find jobs the only feasible opportunity is to migrate to the United States<sup>3</sup>. Unfortunately, these workers are often exploited with long working hours for a limited wage with no benefits; it is a structured oppression towards this marginalized population<sup>3</sup>.

Migration can be either external (e.g., from Mexico to the U.S.) or internal (e.g., within Mexico). Men who migrate between the U.S. and Mexico are considered to be at high risk for HIV<sup>2,7</sup>. It is imperative to study this population to learn about their knowledge, beliefs, and perceptions as well as their misconceptions with regards to HIV in order to better educate them and provide better services tailored to meet their specific needs<sup>7</sup>.

## **Background and Significance**

### **MIGRATION**

#### *MIGRATION WITHIN MEXICO*

In Mexico, the number of people who migrate internally is higher than those who migrate externally to the United States<sup>10</sup>. However, little research has been conducted to explore internal migration within Mexico compared to the more extensive research that has been done on Mexico-U.S. migration flow<sup>10</sup>. Currently, there is a higher concentration of internal migration flow to northern Mexican states. One third of the internal immigrant population goes to midsize cities that border with the U.S.; whereas in the past around the mid-20<sup>th</sup> century the concentration of migration was from rural locations to big metropolitan cities such as Mexico City, Guadalajara, and Monterrey<sup>10,11</sup>. Historically, people migrated mainly from rural areas whereas currently the internal migration flow comes mainly from urban cities<sup>11</sup>.

#### *MEXICO-U.S. MIGRATION*

There has been a historical transnational migration flow from Mexico to the United States. The Bracero Program was a labor migration structure that that allowed for Mexican nationals to enter the United States for labor purposes in the area of agriculture for cheap labor<sup>11</sup>. During the 20<sup>th</sup> century, the migration flow was mainly from rural agricultural areas in Mexico to similar rural areas in the U.S.<sup>11</sup>. Presently, sending origins have diversified to include a flow of migration from urban areas in Mexico; however, the vast majority of migrants still come from rural areas<sup>11</sup>. Despite the number of potential threats (e.g., violence, robbery, and exploitation) faced by immigrants who cross to the U.S.<sup>12</sup>. People continue to take these risks to escape the severity of their economic hardship experienced in their home town<sup>9</sup>.

### *REASONS FOR MIGRATION*

There are many reasons for which people make the decision to migrate. Moreover, there is an important distinction in the decision making process to migrate between those with rural and urban sending origins. The driven force of migrants from rural areas is often associated to unemployment and economic hardship; while migrants from urban areas are motivated to migrate to the U.S. driven by the fact they have already established kin-networks, which facilitates the migration process by providing them shelter and connecting them to jobs<sup>11</sup>. In some instances, having a parent or a sibling who has previously migrated to the U.S. increases the likelihood to migrate, thus making the decision to migrate easier<sup>11</sup>. For the past 30 years, the employment rates have remained considerably low in rural areas, therefore people do not have many options but to consider migrating to either border cities or the United States<sup>13</sup>.

### *POPULATIONS WHO MIGRATE*

Two main groups of people who migrate have been identified; the first group are those who migrate permanently leaving everything behind, for the most part these people take their families with them and their plan is to settle in the new place<sup>9</sup>. The second groups of migrants are those who migrate temporarily in order to send remittances back home and/or bring home seed money for an entrepreneurial business<sup>9</sup>. Being socially connected to people who have previously migrated to the U.S. increases the chances of migration because of the social capital created by those who migrated before them, thus it facilitate the movement<sup>11</sup>. These networks help to lower the monetary expense associated with migrating; in addition they provide future migrants a place to stay, connections and information to find employment as well as social support<sup>11</sup>.



### *MIGRATION OF MIXTEC AND ZAPOTEC MEN*

Indigenous groups such as Mixtec and Zapotec remain understudied, though it is widely known their origins come mainly from Oaxaca<sup>4,14</sup>. Currently, Oaxaca is considered one of the states with the highest poverty levels in Mexico<sup>5</sup> with a predominately indigenous population<sup>15</sup>. As a result of extreme poverty, Zapotec and Mixtec are among the groups of indigenous people forced to migrate out of their communities in order to find jobs<sup>3</sup>. They are known to migrate internally to Mexico City and to the northern cities along the Mexico-U.S. border. Some decide to migrate to the U.S., primarily to California<sup>14</sup>. The majority of Mixtec and Zapotec migrants are males who struggle to find jobs; of those who find jobs the pay is often very low that is not sufficient to support their families<sup>4</sup>. The migration stream of Mixtec and Zapotec men has steadily increased since the 80s due to the economic crisis suffered in Mexico in the 1990s<sup>4</sup>.

There is extensive literature in health and social work research with regards to migration, specifically migration from Mexico to the United States. However, a gap in the literature that is important to mention is that despite the increased interest among researchers on to study migration during the past four decades, there are no migration rates by ethnicity. It is known that women are crossing the border in growing numbers; nonetheless the existing literature does not serve justice to the contemporary migration flow of females<sup>16</sup>.

### **MIXTEC AND ZAPOTEC COMMUNITIES**

Mixtec and Zapotec groups are homogeneous; they belong to a culture of unique practices, and they also share their minority traditions. These characteristics makes them essentially different from the dominant majority and brings them upon difficulties to access vital services conducive to a good quality of life and one of social justice and overall good health<sup>17</sup>. Oaxaca is located in the south of Mexico and its population is mainly composed of these sixteen indigenous groups: Amuzgo, Chatino, Chinantec, Chocho, Chontal, Cuicatec, Huave, Ixcatec,

Mazatec, Mixe, Mixtec, Nahuatl, Popoloca (or Popoluca), Trique, Zapotec, and Zoque<sup>15</sup>. The population in the State of Oaxaca is approximately four million<sup>9</sup>. This is the state of Mexico with the highest numbers of indigenous populations in the entire nation. Furthermore, the linguistic composition of this state includes three major regional languages: Zapotec, Mixtec, and Mazatec<sup>15</sup>.

Oaxaca is not only considered one of the states with the highest poverty levels, it also has the highest mortality rates in Mexico<sup>5</sup>. Its population whom in its majority are indigenous tend to be isolated and suffer from malnutrition, illness, and illiteracy<sup>15</sup>; as a result of their extreme poverty groups of indigenous people such as Zapotec and Mixtec are forced to migrate out of their communities in order to find jobs<sup>3</sup>. Mixtec and Zapotec men from Oaxaca are forced to migrate internally between their villages and to other internal destinations such as Mexico City and cities along the U.S.-Mexican border as well as to the United States, for the most part to California seeking work due to their limited market for labor<sup>4</sup>.

Since the 1990s, there has been an increase in the interest among researchers for studying international migration; a term widely used since then has been the “transnational approach”, which refers to the capacity of migrants to cross national frontiers to then create social fields<sup>18</sup>. Mixtec and Zapotec men are largely known for migrating, whether migrating internally within Mexico or externally to the United States. They are often seen as inferior because of their traditional projections as Indians who live in poverty, are illiterate, and dependent; erroneously, this is the stereotype of so many of Mexico’s indigenous people<sup>7,19</sup>. While it is very important to learn about their history and their past, it is imperative to study Mixtec and Zapotec men presently to learn more about their concerns, their needs, and their

contributions in this era to be able to fully understand them and meet their needs as an increasing migrant population.

## **MIGRATION AND HEALTH**

### *SOCIAL DETERMINANTS OF HEALTH*

Health inequalities are differences in health status, morbidity, mortality, and distributions of health determinants that vary by socioeconomic status, level of education, political power, and mainly exist because of the intersection between race/ethnicity and other social determinants of health<sup>20</sup>. “Social determinants of health are the conditions in which people are born, grow, live, work and age”<sup>21</sup>. These conditions are affected by a wider set of influences such as economics, social policies, and politics<sup>21</sup>. Moreover, social determinants of health are nonmedical factors that influence or threat health such as knowledge about health, attitudes, beliefs, and behaviors<sup>22</sup>. Society has direct influence on the social determinants of health; moreover, social influences or policies impact an individual’s ability to make choices that could be conducive to health or vice versa<sup>23</sup>. There are two different types of social determinants of health. The first set of determinants is the “downstream”; which refers to factors that focus on the individual, its capacities and behavior towards health<sup>22</sup>. On the other hand, the “upstream” determinants of health are concerned with social justice and its understanding that health inequities are caused by environmental, social, and economic differences<sup>22</sup>.

In the recent years, researchers have demonstrated an increased interest in the study of social determinants of health among ethnic and racial minorities<sup>24</sup>. Migration has been recognized an important social determinant of health in the 21<sup>st</sup> century<sup>12</sup>. Moreover, it has been documented that existing conditions surrounding the process of border crossing can increase the susceptibility of a person to become ill and/or affect their health<sup>25</sup>; furthermore, immigrants are

highly vulnerable to racism and discrimination<sup>9</sup> While there has been some research in the role played by migration in social determinants of health<sup>12</sup>, little is known about the effects of racism and discrimination in health inequalities<sup>26</sup>. Health inequalities are described in the literature as unjust racial/ethnic disparities which are intersected by socioeconomic deprivation<sup>20,22,24</sup>; yet, these disparities have not been studied among the migrant population. Hence, the extents to which these inequalities can affect migrants remain unknown.

#### *HEALTH CONSEQUENCES*

Migration has been associated with different health outcomes. Evidence shows that upon their arrival to the U.S. Latino immigrants tend practice healthier behaviors than the White-American population; however, acculturation has a negative impact on their lifestyle and consequently on their health<sup>27</sup>. Moreover, racial minorities are at a much higher risk than non-Hispanic Whites to develop chronic diseases such as diabetes, high blood pressure, and heart disease among many others<sup>28</sup>. In addition, these disparities are a consequence of health-related behaviors (e.g., smoking), being overweight or obese, and having elevated blood glucose levels; all of which are modifiable risk factors<sup>27</sup>. Behavior changes in everyday activities, such as increase in exercise, have been demonstrated to be beneficial for alleviating these disparities<sup>28</sup>. The biggest challenge is that the majority of programs and interventions that currently promote physical activity are not accessible for immigrants or are not offered in a culturally competent mannered to target immigrants<sup>22,26,29,30</sup>.

Acculturation among Mexican Americans has been associated to with a negative effect on mental health and substance abuse due to the adverse social experiences linked to the overall migration process (e.g., racial discrimination, stress of adaptation, cultural identity issues, and economic difficulties)<sup>31,32</sup>. Furthermore, those who have lived longer in the U.S. tend to have

worse mental health outcomes compared to migrants who recently arrived<sup>32</sup>. Individuals who migrate to the U.S. have higher risks for acquiring mood and anxiety disorders than those who do not migrate or do so only internally<sup>32</sup>. Another health consequence associated with Mexico-U.S. migrant populations is the increase in risky behaviors acquired during their migration process such as alcohol drinking, practices of unsafe sex, and substance abuse, which increases risk for HIV/AIDS and Sexually Transmitted Infections (STIs)<sup>2,7</sup>.

Acculturation and ethnic identity both play an important role on health outcomes of U.S. immigrant populations and its effects are complex; adopting the culture of a mainstream population has both negative and positive effects<sup>27,30</sup>. For instance, higher levels of acculturation have been associated with better education attainment as well as higher socioeconomic status that result in greater access to health care; nonetheless, this positive effect does not occur across the board for all migrants as opportunities differ on the individual's circumstances<sup>27,30</sup>.

#### *BARRIERS TO HEALTH CARE*

There is an estimate of 12 million undocumented immigrants living in the U.S. and the majority of them come from Mexico<sup>9</sup>. While policy makers face the challenge of controlling the flow of illegal immigration and at the same time addressing the need for cheap labor, they often forget about the many threats and difficult circumstances faced by this population<sup>9</sup>. A study conducted among a sample representative of the adult population in Mexico and in the United States with epidemiological surveys of psychiatric disorders concluded that migrants are highly vulnerable to various health outcomes<sup>32</sup>. This high vulnerability is mainly due to their lack of access to healthcare, unhealthy lifestyles and living arrangements, low wages, strenuous employment situations, language barriers, feelings of isolation and loneliness, and other stress inducers<sup>32</sup>. Other studies indicate similar findings. A secondary data analysis on data collected

from the Peer Education Ends Risky Behaviors (P.E.E.R.) study designed to assess long term effect of the intervention on HIV Risk Reduction<sup>30</sup>. Migrants are also vulnerable to other potential threats such as violence, robbery, and exploitation that place a heavier burden on their already stressful migration journey<sup>9</sup>. However, little research has been conducted to address the many barriers that migrant populations face towards achieving a healthy life.

Despite the growing literature about migration and the consequences often faced during that journey, there is little evidence about long term health consequences and what happens to those who return to Mexico. An example is the limited evidence of the impact of migration on the risk for depressive and anxiety disorders<sup>32</sup>. One aspect that should be examined closer is the effect of discrimination in depression among migrants. It is mentioned in the literature exhaustively that there is a number of health consequences associated with migration; however the relationship between acculturation and ethnic identity, particularity of Mixtec and Zapotec, have not been deeply studied, and neither have the effects that long periods of stay have on behavior change<sup>30</sup>.

## **HIV/AIDS**

According to the Centers for Disease Control and Prevention (CDC) Human Immunodeficiency Virus (HIV) is the virus that causes Acquired Immune Deficiency Syndrome also known as AIDS; this virus attacks the body's T cells (CD4+) which compromises the immune system and ,thus, the ability to fight disease. It is common for people to be asymptomatic for a period of time but for those that do experience symptoms, experience flu like symptoms<sup>33</sup>. AIDS is the subsequent stage of HIV virus. People infected with the HIV virus may appear healthy for many years; however, their immune system becomes progressively weaker.

Individuals who do not receive diagnosis and treatment will progress to AIDS more rapidly than those taking the medication<sup>34</sup>.

In 2012, it was estimated that more than 1.1 million people were living with HIV in the United States; the number of new HIV infections per year are approximately 50,000<sup>33</sup>. Given that the total number of the people living in the U.S. in 2012 was 313,933,954<sup>35</sup>, the prevalence of HIV in 2012 was 0.015%. The prevalence for HIV among people between the ages of 15 to 49 is approximately 0.6%.<sup>7</sup> The group with the highest risk for HIV are men who have sex with men (MSM)<sup>33,36</sup>; MSM represent approximately 4% of the male population in the U.S., yet, they account for 78% of new HIV male infections and 63% of all new infections<sup>36</sup>. Latinos living in the U.S. accounted for approximately 18% to 20% of all new cases and are approximately 17% of all people with HIV. In 2010, people of Hispanic or Latino origin accounted 16% (50.5 million) of the total U.S. population<sup>37</sup>, hence, they are disproportionally affected by HIV. More than 12.7 million Mexican immigrants were said to be living in the U.S. in 2008, from which approximately half of them are undocumented<sup>34</sup>.

The United States and Mexico are among the top three countries in American continent with the highest number of HIV cumulative cases<sup>7</sup>. In Mexico, the total population is 54,855,231<sup>38</sup>, and in 2011 there were approximately 179,478 people living with HIV<sup>39</sup>, hence, the prevalence is 0.33%. Based on prevalence rates among adult population (aged 15–49), Mexico (0.3%) ranks 23rd in the Americas and number 77 in the world<sup>7</sup>. Among those that are HIV positive in Mexico, 1% of all cases are among sex workers, 10-13% of them are men who have sex with men (MSM), and 4.5% are among injection drug users (IDUs). Thirty-three percent of all HIV cases are among persons living in states with the highest migrant exportation numbers to the

U.S.<sup>7</sup>, hence these are the three groups with the highest risk for HIV in Mexico. The age group most at risk for HIV is 15-49 years of age representing 90.3% of the HIV cases<sup>39</sup>.

There is enough evidence to demonstrate that Mexican men who migrate to the United States are at increased risk for getting infected with HIV; however, little research has been conducted to study the consequences of having HIV once they go back to Mexico<sup>9</sup>. A qualitative study of 10 face-to-face interviews with HIV positive migrant workers who had returned to Mexico from the U.S. and had HIV infected spouses in Oaxaca in July 2007 reported that half of the participants had limited knowledge of HIV at the time of their diagnosis. Only 3 of the 10 participants were tested and diagnosed while in the U.S. and were now taking precautions to prevent infecting wives in Mexico respectively<sup>9</sup>. This study is important because it is estimated that in Mexico, there are approximately 24 million people living in extremely poverty; this situation makes them feel powerless in providing for their families and forces them to migrate to the United States in order to offer basic needs to their families<sup>9</sup>, as a consequence of migration there is a growing number of females being infected with HIV/AIDS by their returning husbands. There is a great need for binational collaborative efforts to research Mexican migrants and their vulnerability to HIV/AIDS<sup>7</sup>.

A cross-sectional binational study enrolled migrants and non-migrant participants (N=2,775) living in five different Mexican states and California 2004-2005<sup>7</sup>. They found that 28.4% of migrant males reported having multiple sexual partners compared to 20.4% of non-migrant males (n=751), a total of 11.0% of migrant males had tested for HIV in the last year compared to 5.1% non-migrant males<sup>7</sup>. Hence, this Indicates that migrants are engaging in high risk behaviors but a low number of them are getting tested for HIV. This is a major problem because they are at high risk for HIV; yet, they have no access to health insurance and also very



limited access for testing<sup>2</sup>. These populations tend to live in inaccessible rural areas and if they live in urban areas, may face problems of acculturation, racism and discrimination. For these reasons they often face barriers to obtaining health services, as well as social and institutional discrimination putting them at high risk for HIV/AIDS<sup>17</sup>.

The reasons migrants have for seeking multiple sexual partners, including sex workers, are complex. A study looked at the relationship between being isolated or feeling lonely and seeking services from sex workers. This study was among 70 Mexican male migrant workers who participated in a two year ethnographic study during 2005-2007 in New York City (NYC), 83% reported missing their families and their lifestyle in Mexico. Approximately three quarters of the participants had been sexually active since their arrival to NYC and 68.8% of those had sex with female sex workers. They reported not only paying for sex but also engaging in conversations with the sex workers and reported enjoying having these conversations<sup>40</sup>. An interesting finding from this study indicates that a large number of migrant males seek companionship as a result of their loneliness more than just looking for sex.

#### *HIV/AIDS KNOWLEDGE*

Past research demonstrates that low education, culture, and fear of becoming infected often leads to little or inaccurate knowledge about HIV/AIDS<sup>41</sup>. In Mexico, there is limited knowledge and little awareness among the general population in rural areas; this may be in part because, in the past, HIV was a problem primarily contained in urban areas<sup>7,9</sup>. An epidemiological surveillance pilot study in five Mexican states suggested that migrant population have better knowledge of HIV/AIDS and the modes of transmission such as sexual behaviors, prenatal transmission as well as needle sharing compared to the non-migrant population<sup>7</sup>.

In rural places in Mexico (e.g., Oaxaca), there is lack of knowledge for HIV and how it is acquired<sup>7,9,42</sup>. People who migrate tend to have better knowledge about HIV and how it is transmitted as compared to those who do not migrate<sup>7</sup>. A study among 100 Hispanic/Latino male migrant farmworkers who participated in a community based participatory research (CBPR) study in North Carolina in 2008 reported, low HIV (mean score=8.1 on 0-11 reverse scale where the highest number indicate the more incorrect responses and vice-versa) and STI (mean score=6.1 on 0-9 scale) transmission and prevention knowledge<sup>42</sup>. For example, more than 60% of the participants reported that HIV can be acquired from coughing and sneezing and only less than 20% reported that STIs can be prevented by choosing partners carefully. Out of the 25 participants that reported having sex during the last three months, 16% reported having sex with a female sex worker<sup>42</sup>. Hence, indicating they are a high risk population with low knowledge about transmission and prevention of HIV. Furthermore, part of the problem is that HIV is not seen as relevant in the rural areas of Oaxaca and people may not see the importance to gain knowledge about HIV<sup>9</sup>.

There is a great need to target the HIV epidemic among indigenous communities in Mexico<sup>9,43</sup>. Surprisingly, the general public, health departments, social administrations, and governmental and social institutions all over Mexico find it difficult to believe that there are homosexual practices among people of indigenous ethnicity<sup>43</sup>. Moreover, these entities lack the cultural sensitivity to properly address the challenges in preventing HIV/AIDS among indigenous populations<sup>43</sup>. This is important to highlight because there is a close association between homosexuality and HIV/AIDS<sup>33,43</sup>. In addition to this problematic situation, some people of indigenous origin think it is in their best interest to maintain the diversity of their sexual preferences to themselves for fear of being further marginalized and discriminated

against; yet, keeping their sexual diversity a secret would also mean keeping silence about their vulnerability, racism, and discrimination<sup>43</sup>. Activists in Mexico have demanded the attention of governmental and public health entities to create public policies in relation to HIV/AIDS in indigenous communities; yet, little has been done<sup>43</sup>. Despite the work of many activists in different parts of Mexico to raise HIV/AIDS awareness and increase knowledge, the need in these indigenous communities is greater not to mention the challenge of their diverse array of languages and dialects<sup>43</sup>. Among the activists are *Muxches* (*Muxhe*, the actual name given in Oaxaca to men with different sexual preferences, they are men who live as women, they dress and behave like women, and are well respected in their communities) who are dedicated to improve the knowledge of indigenous populations about sexual education, sexual rights, homophobia, and HIV/AIDS<sup>43</sup>. They perform a great work among Zapotec communities; yet, one important component that is missing in their agenda is to recognize ethnicity as a risk factor of vulnerability in the fight against AIDS<sup>43</sup>.

#### *PERCEPTIONS AND DISCRIMINATION TOWARDS HIV/AIDS*

Limited knowledge about HIV/AIDS often result in negative perceptions, stigmatization, and discrimination against persons living with HIV/AIDS (PLWHA)<sup>41</sup>. Unfortunately, this is the case for some health care providers as well. Health care providers tend to be misinformed about modes of transmission of HIV and therefore they fear getting infecting when caring for these patients leading to negative attitudes and discrimination against HIV patients<sup>44</sup>. In order to help alleviate this problem, better education for the general public and the healthcare setting with regards to HIV/AIDS is necessary<sup>45-47</sup>.

Education can indeed be the first step, however; the burden of stigmatization must be looked at from a holistic approach since “stigmatization is a cultural, political, economic

phenomenon linked to law, policies, norms, and prejudices”<sup>41</sup>. There is an urgent need for changes in the community level as well as the policy level that will in turn create a change in the way society perceived HIV/AIDS. Past efforts to stop HIV/AIDS stigmatism and discrimination have failed because education alone is not enough<sup>41,45</sup>. Thus irrational fear needs to be eliminated in order to successfully prevent and/or reduce the negative perceptions and discrimination against HIV/AIDS.

A study assessed risky behaviors and perceptions of risk for HIV. This study was conducted among a convenience sample of 1,041 Mexican migrants in Tijuana, Baja California and San Diego, California, who participated in a study in 2002, none tested positive for HIV antibodies<sup>48</sup>. Among migrants, there is variation within perceptions of risk and risk behaviors. For example, among those deported (n=167), 74% indicated perceiving themselves at no risk for HIV yet 46% reported having unprotected sex in the last 6 months. In the case of migrants who arrive to the Mexican border region from non-border regions of Mexico, 88% of them perceived themselves at no risk; however, 60% reported unprotected sex in the last 6 months. Even though a larger percentage of this last group reported perceptions of no risk for HIV, a larger number of them are practicing high risk behaviors such as having unprotected sex. The results of this study may indicate that migrant characteristics, reasons for migrating, deportation status, or where they are migrating from play a role in risk perceptions and risk behaviors.

HIV is disease that has been widely reported in the literature to be highly stigmatized<sup>2</sup>. Stigma and discrimination brings many problems to PLWHA. Stigmatization is often an impediment for people to go get tested or seek preventive support<sup>41</sup>. In addition, individuals who are HIV positive might be resilient to receive treatment because of the discrimination, judgment, and stigma they fear to receive from those around them if they find out their status<sup>2,41</sup>.

Discrimination and negative perceptions may also negatively impact their mental health by creating feelings such as guilt, fear, depression, and shame of being HIV positive<sup>2</sup>.

#### *HEALTH SELF EFFICACY FOR HIV/AIDS PREVENTION*

In self-efficacy theory, a person's beliefs about how well they can deal with certain situations dictate the action they choose to take towards that situation<sup>49</sup>. Similarly, self-efficacy (SE) refers to the beliefs of an individual about their capacity to perform certain tasks and potential to meet situational demands, perceptual control, and personal choices<sup>50</sup>. Moreover, SE is a personal judgment of one's ability to mobilize resources over events<sup>50</sup>. Furthermore, self-efficacy is the set of beliefs that serve to self-regulate one; thus, SE has a direct influence in the choices people make<sup>49</sup>. An example of SE in health would be the decision to wear a condom to significantly reduce the risk of getting infected with HIV/AIDS.

Self-efficacy is very important in a person's health and wellbeing; interventions that focus on cognitive behavior are able to provide and enhance skills of coping and relaxation that promote change in behavior by increasing self-efficacy<sup>50</sup>. Self-beliefs of efficacy act as a self-monitoring of a person's performances<sup>49</sup>. Moreover, SE has been applied in various populations in prevention programs for HIV-risk behavior<sup>50</sup>.

Racial and ethnic minorities have been impacted by HIV/AIDS because they are a marginalized and vulnerable population and also due to the fallacy of the educational systems<sup>51</sup>. It is known that the use of a personal health record (PHR) can help an individual increase their health-related self-management skills. PHRs are tools that facilitate an individual to keep track of their own health; these tools can be in the form of a database, smart phone application, a diary, a print out of a table to fill in the blanks or simply taking notes on paper in a consistent manner. People who use PHRs become more informed and empowered consumers<sup>51</sup>. However, among

minorities the use of PHR has not been successful<sup>51</sup>; besides computer related problems such as literacy and availability another possible explanation could be what Bandura refers as perceived performance determinants<sup>49</sup>. Self-reactions are a result of an individual's perception of the determinants of such behavior<sup>49</sup>. Thus, an individual may not perceive a PHR as a useful tool or one they can take pride in because they may not feel their abilities do not form part of it. Nonetheless, the ultimate goal of a PHR is to create a sense of ownership over one's health and at the same time increase access to personal health care information<sup>51</sup>. PHRs are a new tool and there is not enough evidence yet to explain why these innovative tools are not successful among minority populations. Hence, there is a need to conduct research to assess adaptability of these self-efficacy tools among minority populations and more specifically among Mexican migrants as they would be beneficial in the reduction of health disparities<sup>51</sup>

#### *MIXTEC AND ZAPOTEC MEN AND HIV*

Mixtec and Zapotec men come from rural areas of Oaxaca; they live in poverty, and are largely known for migrating. In the state of Oaxaca there are 5,517 total AIDS cases (3.5%) registered between 1983 and 2012; 4,340 of these cases are among males and 1,177 are among females<sup>39</sup>. Between 1983 and 2013, the total number of HIV cases reported in Oaxaca was 1,376 (i.e., 3.0% prevalence)<sup>39</sup>. The most common mode of transmission reported was heterosexual contact; "male bisexual and homosexual activity account for the second and third largest numbers of HIV cases, respectively"<sup>9</sup>. In the past recent years officials in Oaxaca have noticed a trend of a growing incidence of HIV (i.e., total HIV cases was 293 between 1983 and 2002 and 1,084 between 2003 to 2013) among the families whose husband had migrated transnationally to the United States and returned with HIV<sup>9</sup>. Extreme poverty conditions and social segregations are two of the known causes for increasing the risk for HIV/AIDS and STIs among indigenous

migrant workers<sup>52</sup>. In the past, HIV was mainly spread in urban areas; however, recent data demonstrates that there has been a shift in the spread of the disease towards rural areas<sup>9</sup>. These men often have little awareness of HIV, how it can be transmitted, and what behavior practices put them at high risk<sup>9</sup>.

The spread of HIV/AIDS among indigenous communities are attributed to factors such as migration across the border and exposure to drugs, transactional sex, despair, loneliness, and poverty<sup>9,52</sup>. Susceptibility to HIV/AIDS has also been associated to limited knowledge of prevention for the disease; moreover, there is an increasing exposure to individuals who are infected with HIV, and an increase in newly acquired high-risk behaviors<sup>52</sup>. Additionally, machismo plays an important role in the spread of HIV/AIDS since it is a strong tradition among indigenous groups in Oaxaca<sup>9</sup>. Machismo is the concept that dictates men to be strong, dominant, masculine and with a firm sex virility. For this reason, in this culture it is acceptable that migrant men engage in sexual intercourse and have extramarital relationships<sup>9</sup>.

Overall, there is an absence in the literature regarding Mixtec and Zapotec migrant men and their exposure or risk to HIV/AIDS. More studies are needed to determine what factors can be effective for prevention for this population. Research has established that poverty, culture, limited knowledge of how HIV/AIDS is transmitted, and risky behaviors play an important role in the spread of HIV/AIDS. Nonetheless, there is a great need to conduct further research to determine if the length of migration time has a relation with HIV/AIDS knowledge and other important factors.

## **HEALTHY PEOPLE 2020**

Healthy People 2020 is a national effort that provides science-based, 10-year objectives for improving the health of all Americans. For the past three decades, Healthy People has

established benchmarks and monitored progress over time in order to encourage collaborations across communities and sectors, empower individuals toward making informed health decisions, and measure the impact of prevention activities<sup>53</sup>.

The current study is employing objectives from Healthy People 2020 in the areas of HIV and social determinants of health as these two have a common ground with health outcomes related to the study population. HIV is a health outcome in the context of the current study. In order to better understand HIV it is important to look at the efforts at the national level, such as this case at Healthy People 2020.

The primary goal for HIV is to “prevent human immunodeficiency virus (HIV) infection and its related illness and death”<sup>53</sup>. Some of the objectives that are applicable to the population of the proposed study are to: Reduce new HIV diagnosis among adolescents and adults (HIV-1); reduce new (incident) HIV infections among adolescents and adults (HIV-2); reduce the rate of HIV transmission among adolescents and adults (HIV-3); reduce new AIDS cases among adolescents and adults (HIV-4) ; reduce new AIDS cases among adolescent and adult heterosexuals (HIV-5); reduce new AIDS cases among adolescent and adult men who have sex with men (HIV-6); reduce new AIDS cases among adolescents and adults who inject drugs (HIV-7); increase the proportion of persons living with HIV who know their serostatus (HIV-13); increase the proportion of adolescents and adults who have been tested for HIV in the past 12 months (HIV-14); increase the proportion of adults with tuberculosis (TB) who have been tested for HIV (HIV-15); increase the proportion of sexually active persons who use condoms (HIV-17); reduce the proportion of men who have sex with men (MSM) who reported unprotected anal sex in the past 12 months (HIV-18)<sup>53</sup>. All of these objectives address the



population of the study indirectly as it does not specify ethnicity or migration status and they are directed to the entire population of the U.S.

Another Healthy People 2020 objective relevant to the population of the current study are social determinants of health. Since the general populations of the current study are Mexican indigenous migrant men, they are directly affected by the social determinants of health. Migrants are a vulnerable population who often face various threats to their overall health and social well-being<sup>32,42</sup>. The primary goal for social determinants of health is to “create social and physical environments that promote good health for all”<sup>53</sup>. Although Healthy People 2020 has not developed any specific objectives yet, these are very important to public health. The social determinants of health are described as “the circumstances, in which people are born, grow up, live, work, and age, as well as the systems put in place to deal with illness. These circumstances are in turn shaped by a wider set of forces: economics, social policies, and politics”<sup>21</sup>. Despite the recent increase in interest for social determinants of health in ethnic/racial minorities, there is still a gap in the literature regarding migration as a social determinant of health.

## **Goals and Objectives**

The main goal of the study is to describe how migration impacts HIV/AIDS related factors among Mixtec and Zapotec men who migrate.

The objectives of this study are to describe the relationships between migration patterns and HIV related factors, including knowledge, perceptions, discrimination, health self-efficacy, and risky behaviors among Mixtec and Zapotec men who migrate.

## **Study Aims and Hypotheses**

Among adult Mixtec and Zapotec men who migrate within Mexico and to the United States, the aims of this study are to:

1. describe total migration time away
2. describe sexual partners and condom use
3. describe HIV/AIDS knowledge, perceptions and discrimination towards HIV/AIDS, health self-efficacy, and for HIV/AIDS
4. determine the association between migration time and sexual partners and condom use, HIV/AIDS knowledge, perceptions & discrimination towards HIV/AIDS, and health efficacy for HIV/AIDS.

The hypotheses of this study are that longer migration time will be associated with:

1. increased number of sexual partners
2. increased condom use
3. increased HIV/AIDS and STI knowledge
4. decreased HIV/AIDS perceptions and discrimination
5. increased self-efficacy

## **Methods and Materials**

The current study is a secondary data analysis on the data collected in the parent study entitled “Risks for HIV/AIDS and Sexually Transmitted Infections (STIs) among Mixtec-Zapotec men who migrate within Mexico and to the U.S.” This study assessed migration of Mixtec and Zapotec men and the factors that increase their vulnerability to HIV / STIs by site. They were interested in learning about the behaviors and other factors among Mixtec and Zapotec men from the state of Oaxaca who migrate to cities within Mexico and to the U.S. using interviews in Vista, CA in the U.S. and Chihuahua, CHI, and Oaxaca, OAX in Mexico. The study explored the factors that are known to be associated with HIV and STIs (e.g., reason for and routes of migration, income sources, gender identity, risk behaviors, and sexual partner(s). The data for this study was collected using a structured questionnaire in this Research Program on Migration and Health (PIMSA) funded parent study.

### **SAMPLE POPULATION**

The entire sample of the parent study was used for the current study. The inclusion criteria for participation in the study included: (a) self-identified Mixtec or Zapotec man; (b) 18 years old or older; (c) speaks Spanish; and (d) migrated within Mexico or to the U.S. The exclusion criteria included: (a) self-reported mental illness diagnosis or any condition that limit participation in a 90 minute interview; (b) persons under the influence of alcohol or other drugs; (c) anyone who does not wish to participate on a voluntary basis; or (d) anyone who did not meet the inclusion criteria. Mixtec and Zapotec men, who migrated, participating in this study, were now living in either one of these three sites:

1. Oaxaca, OAX (migrated in the past)
2. Chihuahua, CHIH (internal migrants)

### 3. Vista, CA (international migrants)

#### **SAMPLE SIZE**

The sample size of 106 consisted of 35 participants from Chihuahua, CHIH 36 from Oaxaca, OAX, and 35 from Vista, CA, who met the above criteria.

#### **STUDY DESIGN**

The design for the parent study was mixed methods; including qualitative and quantitative methods. The design of this current study was a secondary data analysis of only the quantitative data from parent study including the entire population from all three sites.

#### **MEASURES**

The questionnaire consisted 108 questions in 13 different sections on the following areas: demographic characteristics (e.g., gender identity, ethnicity, place of birth, place of residence, and religion); migration (e.g., why they left place of origin, for how long did they live outside their community last time they went out, and for how long they have lived there); sexual behaviors (e.g., with primary and secondary sexual partners, gender of sexual partner(s), and condom use); access to goods and services (e.g., do they have a car, telephone, radio, television, stove, and refrigerator); access to health care (e.g., do they or someone in their family receive support form “oportunidades”, do they have right to query ISSSTE, PEMEX, private physician, do they have “seguro popular”, and when they get sick where do they go to get served); health education (e.g., what talks have they received regarding diabetes, family planning, STIs, HIV/AIDS, alcoholism, and drug use, who has given them these talks, has someone talked to them about condoms and how to use them, has someone offered them an HIV test, and would they like to get tested).

It also included, measures for risk perceptions on HIV/AIDS (e.g., do they think they are at risk for having a sexually transmitted disease, they already have a sexually transmitted disease, their partner(s) is at risk of contracting a sexually transmitted infection, their partner(s) already has a sexually transmitted infection, they can become infected with HIV/AIDS, they already have HIV/AIDS, they think their partner(s) can become infected with HIV/AIDS, they think their partner(s) already has HIV/AIDS); and attitudes towards condom use (e.g., people who carry condoms are willing to have sex with anyone, if their partners suggests using a condom would they accept, people who use condoms deserve respect, if their partners suggests using a condom do they feel safe, and people who carry condoms are just looking for sex).

In addition, these measures were assessed and served as data for the current study.

#### *DEMOGRAPHIC CHARACTERISTICS*

The demographic characteristics include ethnicity (e.g., Zapotec, Mixtec, other); years of age; schooling (e.g., none, elementary, middle school, high school, technical education, and college); marital status (e.g., single, married, living together, separated, divorced, and widow); and current job (e.g., activities in the field, construction, industry, transportation, government, merchant, tourism, pensioner, home, domestic worker, hotel worker, dependent, unemployed, and other) (see appendix for full questionnaire).

#### *MIGRATION TIME*

Participants were asked why they left their place of origin (e.g., to study; to work; family reasons; and other) and how long have they have lived outside their community, total (e.g., less than a month; 1 to 3 months; 3 to 6 months; 6 months to a year; more than a year). If they indicated that had been away for more than a year, they were asked how many years they had been away.

#### *SEXUAL PARTNERS AND CONDOM USE*

Participants were asked if they have you had sex with their stable partner in the last 6 months; answer choices included vaginal, oral, and anal (of those participants with a stable partner). They were also asked how often they used condom with their stable partner in the last 6 months; answer choices included always, half of the time/regularly, rarely, and never. Then, they were asked if they have had sex with other people other than their stable partner in the last 6 months. Those that had other partners in the last six months were asked how often they used a condom with their last female partner and their last male partner and the number of total sexual partners (including stable partner, if they have one and if they had sex with them).

#### *HIV/AIDS AND STI KNOWLEDGE*

Participants were asked if they agreed (e.g., yes, no, or don't know) with the following statements regarding HIV/AIDS and STI knowledge: people who have HIV get sick fast; women can infect man if they do not use a condom; to avoid getting HIV/AIDS, we must have one sexual partner; all sexually transmitted diseases, NOT HIV/AIDS can be cured with medication; a pregnant woman with HIV/AIDS can spread the disease to the unborn baby; mosquitoes can transmit HIV/AIDS when they bite us.

#### *HIV/AIDS PERCEPTIONS AND DISCRIMINATION*

Participants were asked if they agreed (e.g., yes, no, or don't know) with the following statements regarding HIV/AIDS Perceptions and Discrimination: HIV/AIDS is a disease of people from the outside; only prostitutes have HIV/AIDS; only homosexuals have HIV/AIDS; people who have HIV/AIDS is expelled from the community; people who have HIV/AIDS have the right to be loved and cared by his/her family; people who have HIV/AIDS have the same rights as those that do not have it; people living with HIV/AIDS are entitled to work; people living with HIV/AIDS have the right to marry; people living with HIV/AIDS have a right to have

sex; people living with HIV/AIDS are entitled to attend school; people outside of the community brings HIV/AIDS; people who returns to their community bring HIV/AIDS.

#### *HEALTH SELF-EFFICACY FOR HIV/AIDS*

Participants were asked if they agreed (e.g., yes, no, or don't know) with the following statements regarding Health Self Efficacy: it's up to me if I get HIV/AIDS; if I am infected with HIV/AIDS is a matter of fate; if I am infected with HIV/AIDS is the fault of others; it takes a lot of information to avoid getting infected with HIV/AIDS; if I adopt appropriate measures, I can avoid getting the HIV/AIDS virus; much money is needed to avoid getting HIV/AIDS; if I become infected is a matter of luck; preventing HIV/AIDS depends on my partner agreeing to use a condom; it takes a lot of education to avoid getting infected with HIV/AIDS; in order for me to get infected with HIV/AIDS, depends on my own actions.

#### **DATA COLLECTION**

Data was collected during 2011-12 at the three locations mentioned above. Participants were recruited at their work sites (e.g., agricultural farms) or through community organizations and were interviewed onsite or on the participants day off. The entire questionnaire was in Spanish.

#### **STATISTICAL ANALYSIS**

##### *DATABASE MANAGEMENT*

Reponses from the questionnaires were entered into a database and cleaned using IBM SPSS Statistics Software <sup>54</sup>.

A new variable was created for migration time spent away. This variable came from how long (total time) they had lived outside their community. The possible responses were: Less than a month; 1 to 3 months; 3 to 6 months, 6 months to a year; and more than a year. Of the 105



participants who answered this question, the majority (n=90; 84.8%) reported they had lived outside of their communities more than a year; hence they answered the provided the total years they had been away from their community (i.e., continuous variable). Only 15 participants (14.1%) reported less than a year for total migration time (i.e., categorical variable). For those responses, the variable was recoded from a categorical to continuous variable by using the mean of levels for the categorical responses and changed the units to years for all entries.

#### *ANALYSIS*

None of the continuous variables used in this analysis (i.e., migration time away) were normally distributed, including the outcome, hence non-parametric tests were used (e.g., Spearman Correlations, Mann-Whitney U-tests, Kruskal-Wallis Test). Univariate statistics included frequencies and percentages for categorical variables and median and quartiles were reported for continuous variables. Bivariate statistics for categorical variables included medians and quartiles of migration time away by each level of the categorical variable. All the analysis was conducted using IBM SPSS Statistics Software (Version 19)<sup>54</sup>.

#### **IRB APPROVAL**

The parent study was approved in April 18, 2011 by the University of Texas at El Paso Institutional Review Board (IRB). Under “Risks for HIV/AIDS and Sexually Transmitted Infections (STI) among Mixtec-Zapotec men who migrate within Mexico and to the U.S. [IRB reference number 232993]. The expiration date for this IRB approval was April 18, 2012. For the current secondary data analysis study, UTEP Institutional Review Board for exemption was requested under the “*Secondary Use of Pre-Existing Data*”. The request for exemption was approved on July 3, 2013 by the University of Texas at El Paso IRB under “Knowledge, Perceptions, Discrimination, Health Self-Efficacy, and Risky Behaviors for HIV/AIDS and its

Association with Migration Time among Mixtec and Zapotec Men who Migrate, 2012” [IRB reference # is 479828-1].

## **Results**

The total number of participants in this study was 106. Univariate statistics or all measures and bivariate associations with migration time away are presented (Table 1).

### **OUTCOME**

Migration time away, in years, was the primary outcome of this study. Participants reported median time away was 8 years and ranged between 5 months to over 53 years (Figure 1).

### **DEMOGRAPHIC CHARACTERISTICS**

Of these, 70.8% were of Mixtec descent and 29.2% were Zapotec men. The median for age among participants was 35, their ages ranged from 19 to 79. Among all participants, 71.7% reported having no education at all or having elementary education. Most of the participants (73.4%) reported either being married or in civil union. More than half (55.7%) of the participants reported to work in activities in the field, 13.2% reported working in construction, and 16% reported another occupations.

We found statistically significant associations between time spent away by ethnicity (p-value=0.001), schooling (p-value=0.029), and marginally by activities in the field (p-value=0.051). There was a higher median for migration time away for Mixtec men (median=11.5) compared to Zapotec men (median=4.5). Those with technology education had highest median time away (median=15.0) however, these represent only two participants. Those working in the field had a lower median time away compared to those with other jobs (medians=6.2 vs. 11.0).

### **MIGRATION**

Participants reported reasons for leaving their place of origin. The primary reason was to work (87.7%), followed by other reasons was other (8.5%). A small percentage of them (2.8%)

reported family reasons. Those who reported “other” reason for leaving their place of origin indicated that their reasons for leaving were to progress, for a better future, due to poverty, to have a better life, for family reasons, for the education of their kids.

There was a statistically significant association between migration time away by reasons for leaving place of origin ( $p\text{-value}=0.046$ ). Those who migrated to work had a lower median time away (median=7.5) compared to those who migrated for family reasons (median=21.0), and those who reported “other” for reason for migrating (median=19.0). It is important to note that even though only three participants reported family reasons for migrating, their median migration time away was 21 years, almost three times higher than those who reported work as their reason for migrating.

#### **SEXUAL PARTNERS AND CONDOM USE**

The majority of participants (90.0%) reported having sex with their stable partner in the last six months. Of those, 98.6% reported having had vaginal sex, 11.1% oral sex, and 4.2% anal sex. Only 7.5% reported always using a condom with their stable partner while 76.1% reported never using a condom with their stable partner in the last six months. Close to a fifth of all participants (19.2%) reported having sex with other people other than their stable partner in the last six months and 10.8% of participants reported having sex with their stable partner and other sexual partner(s) in the last six months; meaning half of those with other partners had a stable partner. The median number of total sexual partners (including stable partner, if they have one and they had sex with) in the last six months was one, with no variability. The median number of other sexual partners (not including stable partner if they have one) in the last six months was two (range 1 – 3). There were no differences in migration time away and any of the measures for sexual partners and condom use.

## **HIV/AIDS AND STI KNOWLEDGE**

There were high rates of participants who agreed with assertions regarding HIV/AIDS and STI knowledge including people who have HIV/AIDS get sick fast (67.3%); untreated sexually transmitted infection can make you unable to have children (48.1%); having a sexually transmitted infection facilitates the spread of HIV/AIDS (67.6%); women can infect men if they do not use condoms (87.4%); to avoid getting HIV they must have only one sexual partner (82.9%); and a pregnant woman with HIV/AIDS can spread the disease to the unborn baby (74.3%).

However, there were also high rates of participants who agreed with misconceptions such as one can get infected with HIV/AIDS through a cut in the skin (54.8%); all sexually transmitted diseases (excluding HIV/AIDS) can be cured with medication (73.3%); and HIV/AIDS can be transmitted through a mosquito bite (52.4%).

Other misconceptions in knowledge, although less prevalent, included washing the female part after sex helps protect you from sexually transmitted infections (37.5%); at first glance you can tell if your partner has a sexually transmitted infection (18.3%); a person can become infected with HIV/AIDS by using the same knives, spoons, glasses, clothing, bedding or bathroom with someone who has the disease (36.2%); if a woman takes birth control pills, she has protection against HIV/AIDS (20.4%); and if a person has HIV/AIDS, there is a risk of infection by kissing on the cheek or hand (34.0%). We found no associations between migration time away and any of the measures for HIV/AIDS and STI knowledge.

## **HIV/AIDS PERCEPTIONS AND DISCRIMINATION**

There were high rates for responses indicating participants were tolerant towards or did not discriminate against persons with HIV/AIDS. The majority of participants believed that people who have HIV/AIDS have the right to be loved and cared by his/her family (81.0%); have the

same rights as those that do not have it (80.0%); have the right to work (78.1%); and have the right to marry (53.3%). Additionally, the majority of the participants (80.0%) believed that the children of people living with HIV/AIDS are entitled to attend school, and that people living with HIV/AIDS have the right to have sex (49.5%); and to receive free medical treatment (85.6%). However, only 37.1% reported that people living with HIV/AIDS have the right to have children.

There were also high rates of responses indicating stigma or rejection towards HIV/AIDS. The majority of participants (54.3%) reported that HIV/AIDS is a disease of people from the outside; that people from outside of the community brings HIV/AIDS (63.8%); and that people who return to their community brings HIV/AIDS (54.3%). The following are results that also indicated participants discriminate against persons with HIV but in lower rates: 40.0% of participants reported that only prostitutes have HIV/AIDS; 39.0% reported that only homosexuals have HIV/AIDS; and 23.1% reported that people with HIV/AIDS are expelled from the community.

There were significant associations for people with HIV are entitled to work ( $p$ -value=0.033) and the children of people living with HIV/AIDS are entitled to attend school ( $p$ -value=0.006) by migration time away. Those who indicated that people living with HIV/AIDS do not have to right to work had a lower median migration time away (median=4.0) compared to those who indicated they had (median=10) and those who indicated they didn't know (median=9.8). Similarly, those who responded they did not agree with the statement about children of people living with HIV/AIDS have the right to attend school had a much lower median for migration time away (median=1.9) compared to those who agreed (median=10.0) and those who didn't know (median=10.0).

## **HEALTH SELF-EFFICACY FOR HIV/AIDS**

Most participants felt they had personal control over contracting HIV by agreeing to the following statements: it's up to you if you get HIV/AIDS (81.9%); if you adopt appropriate measures, you can avoid getting the HIV/AIDS virus (81.7%); and getting infected with HIV/AIDS depends on your own actions (84.6%).

On the other hand, 74.3% of participants agreed that it takes a lot of information to avoid getting HIV/AIDS, more than half (67.0%) agreed that it is up to their partner agreeing to use a condom to avoid getting infected with HIV, and many participants (54.4%) felt it takes a lot of education to avoid getting HIV/AIDS.

Approximately one quarter of the participants agreed with the following statements: if you are infected with HIV/AIDS is a matter of fate (25.7%); if you are infected with HIV/AIDS it is the fault of others (22.9%); much money is needed to avoid getting HIV/AIDS (21.9%); and if you become infected with HIV/AIDS is a matter of luck (29.5%). There were no associations between migration time and any of these measures for health self-efficacy for HIV/AIDS.

## **SUMMARY OF RESULTS**

In summary, a significant association between migration time away, the outcome of the study, was detected for several demographic variables including ethnicity, schooling, and marginally by activities in the field and the reason they left their place of origin. Migration time away was associated with only two measures for HIV/AIDS perceptions and discrimination: (1) people with HIV are entitled to work, and (2) the children of people living with HIV are entitled to attend school. Migration time away was not associated with measures for (a) sexual partners and condom use; (b) HIV/AIDS AND STI knowledge; or (c) health self-efficacy for HIV/AIDS.

## **Discussion**

### **IMPLICATIONS**

While individual factors are important to address, approaches that address social and environmental factors are essential to make an impact at a large scale. Future studies should not only focus on the individual but instead should focus on contextual factors (e.g., social networks, policy, environment, etc.) as well as structural factors (e.g., poverty, economic crisis, etc.) beyond migration time away because alone it does not explain variability in independent variables. It would also be beneficial to study children of migrants in the context of HIV/AIDS knowledge, perceptions, discrimination, and risky behaviors to see how their lives are affected by the absence of parents for long periods of times. Moreover, future public health interventions should be tailored to those with low education. People with low levels of education may not have access to information regarding health issues the way people with higher levels of education do. Although we found differences by education and marital status, it is not clear what these differences mean because the parent study was not adjusted for age.

### **STRENGTHS**

The main strength of the study is that this study is specific to Mixtec and Zapotec men as opposed to all Mexican migrants. This is strength because this type of study had not been done before.

### **METHODOLOGICAL LIMITATIONS**

There were several limitations of the parent study that may affect the current study. The first one is that interviewers were different per site. For example in the state of Oaxaca, interviews were conducted by peer community members who were known leaders in the community. However, in California, the interviews were conducted by outreach workers from a local health community clinic who had developed rapport with the community but were not Mixtec or Zapotec. In the state of Chihuahua interviews were conducted by investigators of a



university but who had also established trust and rapport with the community over the years. Thus, although the training and preparation to conduct interviews was the same for each of the site, differences in the interviewers and may have had an effect on how participants responded to the questionnaire per site. A second limitation is that migration status was based on their current location, where they were living at the time of the interview and previous migration paths were not assessed. This does not allow us to determine of the total migration time away was at one point of migration experience or several. A third limitation is that analysis for migration time was not stratified in age group nor was it was not adjusted for age. In assessing access to health care, social security or *Seguro Social (IMSS)* was not listed as an option although may have been provided as a response for “other” which has not yet been analyzed. Most importantly, the current study was limited to the data previously collected for other purposes, not for assessing correlates of migration time.

#### **ANALYTICAL LIMITATIONS**

Migration time was the outcome of this study; however, it is important to note that this variable was collected categorically and was then turned into a continuous variable. This is a possible limitation because the results reported could have been slightly modified or biased due to the conversion of variables. There was no difference in migration time away by HIV/AIDS AND STI knowledge, thus indicating that the way Mixtec and Zapotec men think may not be influenced by being away. A possible reason could be that they often migrate to places where community members are similar to their communities or origin. As indicated in the literature being socially connected facilitates the migration movement because it provides them with a source of shelter and job connections<sup>10</sup>; however, the study did not assess where this population

is moving to. Similarly, migration time did not have an association with HIV/AIDS sexual partners and condom use; thus, indicating that time away does not impact the way they behave.

## MPH Core Competencies

**Social and behavioral sciences** in public health address the behavioral, social, and cultural factors related to individual and population health and health disparities over life course. Research and practice in this area contributes to the development, administrative and evaluation of programs and policies in public health and health services to promote and sustain healthy environments and healthy lives for individuals and populations. The MPH student can identify critical stakeholders for the planning, implementation, and evaluation of public health programs, policies, and interventions (Competency #4). During the thesis I have expanded my knowledge that will in turn allow me to plan and implement programs targeted to vulnerable populations such as people living with HIV.

**Biostatistics** is the development and application of statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research. The MPH student is be able to apply descriptive techniques commonly used to summarize public health data (Competency #5) and apply informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation (Competency #8). During the analysis part of the thesis I have applied biostatistics to analyze, summarize and interpret the results that apply to my study.

**Epidemiology** is the study of patterns of disease and injury in human populations and the application of this study to the control health problems. Upon graduation, MPH student should be able to describe a public health problem in terms of magnitude, person, time, and place (Competency #3). During the thesis I have described the magnitude of the current burden of HIV/AIDS among the Mixtec, Zapotec, and similar vulnerable migrant populations.

### **Health Disparities in Hispanic / Border Health Concentration Specific Core**

Competency: The MPH student is able to act as an effective resource person for Hispanic and border residents, organizations and communities (Competency #12) and utilize basic concepts in skills involved to facilitate culturally/linguistically appropriate Hispanic/border community engagement and empowerment (Competency #13). During the thesis process along with my practicum experience, I have acquired new skills or strengthened existing skills that have allowed me to act as a mentor and advocate for vulnerable populations by taking into account cultural competencies. Unrelated to this thesis project but relevant to HIV in the local El Paso community, I have volunteered for various events related to HIV awareness and prevention such as the National HIV Testing Day three years in a row, AIDS Walk hosted by International AIDS Empowerment, and World's AIDS Day Event among others. During these events I have had the opportunity to distribute condoms, present national, state, and local data on HIV/AIDS to community members, and serve as a resource person for testing sites and other referral services available in the community.

During the literature review I conducted for my thesis work I learned that Hispanics/Latinos living in the U.S. suffer a disproportionate burden of HIV/AIDS<sup>34</sup>. I also learned that there is a need to increase basic understanding of the epidemic and raise awareness among vulnerable communities such as migrant men and farmworkers. Migrant workers and/or farmworkers who are constantly moving from one location to another are at high risk for acquiring HIV among other STIs; moreover, they may unknowingly be transmitting the disease not only through the United States but also across the border to Mexico<sup>9,42</sup>. This is particularly important to me as a public health advocate being that I reside in El Paso, Texas; city that sits on the U.S-Mexico border. Thanks to the MPH core courses and my thesis work, I have also learned

that in order to successfully implement a program, one must be sensitive to the unique characteristics of the population one is working with. In the case of the community of El Paso, language, level of education, culture, and income among others are some of the characteristics that distinguish this community from others.

Table 1: Univariate Statistics and Bivariate Associations<sup>§</sup> by Migration Time Away (N=106)

Univariate Statistics and Bivariate Associations <sup>§</sup> by Migration Time Away (N=106)				Overall (N=106)				Migration Time Away (N=105)			
	N	Freq	%	N	Median	(Q1-Q3)	p-value <sup>§</sup>				
	N	Median	(Q1-Q3)	N	Spearman Correlations (R)						
DEMOGRAPHIC CHARACTERISTICS											
Ethnicity	106						0.001				
Mixtec		75	70.8%	74	11.5	(4.5-20)					
Zapotec		31	29.2%	31	4.5	(1.8-9)					
Age (years)	106	34.5	(25.8-46.5)	105		0.471					
Schooling (maximum level completed)	106						0.029				
None		12	11.3%	12	5.3	(1.4-9.8)					
Elementary		64	60.4%	63	12.0	(4-22)					
Middle School		21	19.8%	21	6.0	(3.2-8)					
High School		5	4.7%	5	3.0	(2.5-11)					
Technology Education		2	1.9%	2	15.0	(10-20)					
University		2	1.9%	2	--	--					
Marital Status	105						0.113				
Single		24	22.9%	24	6.1	(3-10.6)					
Married		66	62.9%	65	8.0	(3-17)					
Civil Union		11	10.5%	11	12.0	(5.3-20.7)					
Separated		1	1.0%	1	--	--					
Divorced		2	1.9%	2	35.8	(30.5-41)					
Widow		1	1.0%	1	--	--					
What is your current job?											
Activities in the field	106						0.051				
Yes		59	55.7%	58	6.2	(2.5-18.3)					
No		47	44.3%	47	11.0	(6-20)					
Construction	106	14	13.2%	14	17.2	(4-23.5)	0.151				
Industry	106	3	2.8%	3	17.0	(16.1-25.5)	0.094				
Transportation	106	5	4.7%	5	8.0	(2-8)	0.527				
Government	106	1	0.9%	1	--	--	0.222				
Merchant	106	6	5.7%	6	6.0	(3-6.5)	0.165				
Tourism/Tertiary Sector	106	3	2.8%	3	10.0	(6.3-10.1)	0.714				
Pensioner	106	0	0.0%	--	--	--	--				
Home	106	0	0.0%	--	--	--	--				
Domestic Worker	106	1	0.9%	1	--	--	0.467				

Hotel worker	106	2	1.9%	2	9.1	(8-10.3)	0.870
Dependent	106	2	1.9%	2	11.5	(11-12)	0.614
Unemployed	106	4	3.8%	4	20.0	(12.5-36.8)	0.111
Other	106	17	16.0%	17	13.0	(7-19)	0.221
<b>MIGRATION</b>							
Why did you leave your place of origin?	106					<b>0.046</b>	
To study		1	0.9%	1	--	--	
To work		93	87.7%	92	7.5	(3-17.6)	
Family reasons		3	2.8%	3	21.0	(20.5-21.5)	
Other		9	8.5%	9	19.0	(11-20)	
Better Future		--	11.1%			--	
Poverty. To have a better life		--	11.1%			--	
To study and to work		--	11.1%			--	
To study, to work, and family reasons		--	11.1%			--	
To progress		--	22.2%			--	
To work and the education of your kids		--	11.1%			--	
Poverty		--	11.1%			--	
Poverty and to work		--	11.1%			--	
For how long have you lived outside your community, IN TOTAL (years)?	105	8.0	(3.1-19.3)				
<b>SEXUAL PARTNERS AND CONDOM USE</b>							
Have you had sex with your stable partner in the last 6 months?	83					0.080	
Yes		75	90.4%	74	8.0	(3-19)	
No		8	9.6%	8	14.1	(8-30.2)	
Vaginal	72	71	98.6%	70	8.0	(3-19.3)	0.845
Oral	72	8	11.1%	8	6.5	(3.3-9.1)	0.330
Anal	72	3	4.2%	3	2.0	(1.4-6.1)	0.193
How often did you used condom with you stable partner in the last 6 months?	67					0.605	
Always		5	7.5%	5	8.0	(3-9)	
Half of the time/regularly		4	6.0%	4	5.9	(0.8-12.5)	
Rarely		7	10.4%	7	11.0	(6.8-23)	
Never		51	76.1%	50	7.5	(3-19)	
Have you had sex with other people other than your stable partner in the last 6 months?	104	20	19.2%	20	2.0	(3.1-11.1)	0.542
Participant has sex with his stable partner and other sexual	83	9	10.8%	9	8.0	(3-10.3)	0.346

partner(s) in the last 6 months							
Number of total sexual partners (including stable partner, if they have one they had sex with) in the last six months	96	1.0	(1-1)	95		-0.131	
Number of other sexual partners (not including stable partner if they have one) in the last six months	12	2.0	(1-2.8)	12		-0.362	
<b>HIV/AIDS AND STI KNOWLEDGE</b>							
Washing the female part after sex helps protect you from sexually transmitted infections	104	39	37.5%	38	10.1	(3.2-19.3)	0.587
You can be infected with HIV/AIDS through a cut in the skin	104	57	54.8%	56	10.1	(4.3-20)	0.198
At first glance you can tell if your partner has a sexually transmitted infection	104	19	18.3%	19	6.3	(3.8-16)	0.707
People who have HIV/AIDS get sick fast	104	70	67.3%	69	8.0	(3.5-20)	0.705
A person can become infected with HIV/AIDS by using the same knives, spoons, glasses, clothing, bedding or bathroom with someone who has the disease	105	38	36.2%	37	14.0	(4-20.4)	0.126
An untreated sexually transmitted infection can make you unable to have children	104	50	48.1%	49	10.0	(4.5-20)	0.193
Women can infect men, if they do not use condoms	103	90	87.4%	89	9.0	(4-20)	0.489
If a woman takes birth control pills, she has protection against HIV/AIDS	103	21	20.4%	20	7.1	(1.9-20.5)	0.853
Having a sexually transmitted infection facilitates the spread of HIV/AIDS	105	71	67.6%	70	9.5	(4-20)	0.315
If a person has HIV/AIDS, there is a risk of infection by kissing on the cheek or hand	103	35	34.0%	34	6.0	(3-20)	0.534
To avoid getting HIV/AIDS, we must have one sexual partner	105	87	82.9%	86	8.0	(3-20)	0.754
All sexually transmitted diseases, NOT HIV/AIDS, can be cured with medication	105	77	73.3%	77	10.0	(3-19.3)	0.882
A pregnant woman with HIV/AIDS can spread the disease to the unborn baby	105	78	74.3%	77	8.0	(4.5-19)	0.680



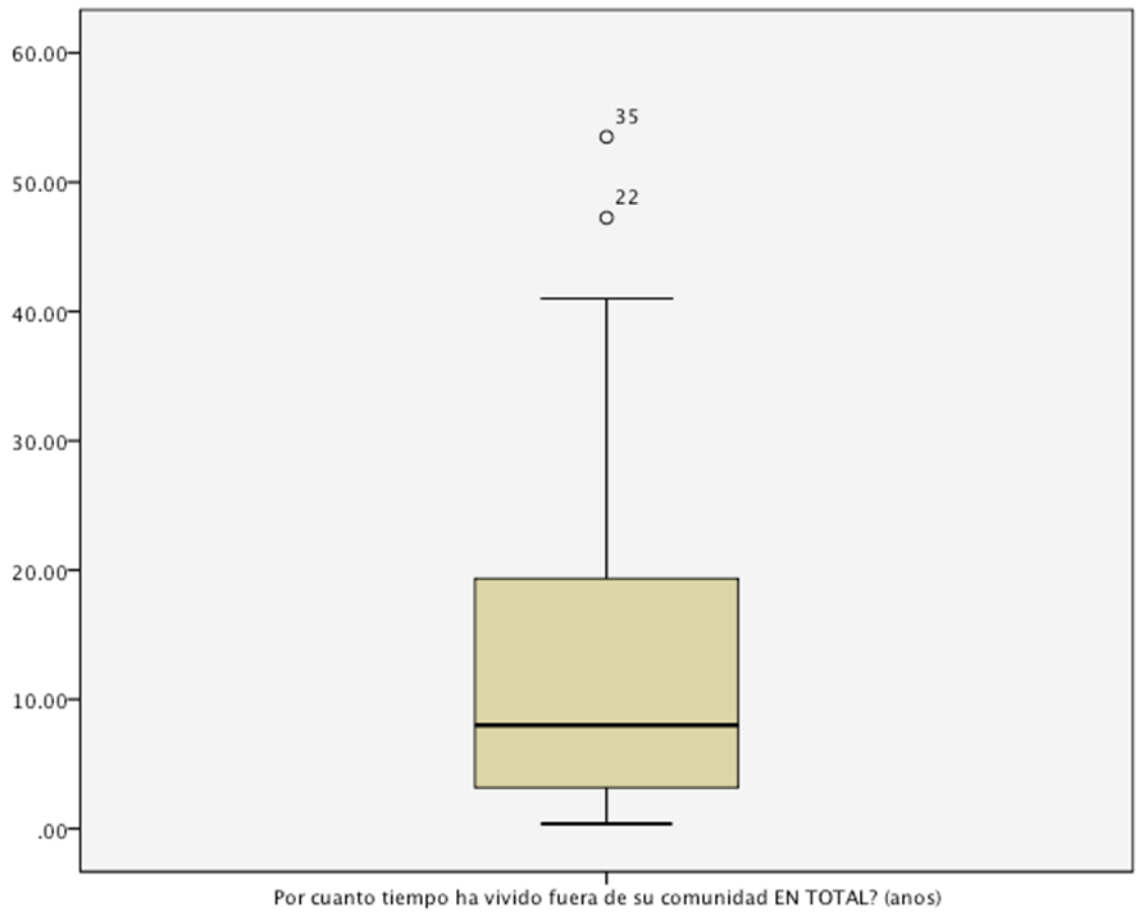
Mosquitoes can transmit HIV/AIDS when they bite us	105	55	52.4%	54	8.0	(4-20)	0.547
<b>HIV/AIDS PERCEPTIONS AND DISCRIMINATION</b>							
HIV/AIDS is a disease of people from the outside	105	57	54.3%	56	8.5	(3.1-19.7)	0.746
Only prostitutes have HIV/AIDS	105	42	40.0%	41	7.0	(3-19.3)	0.998
Only homosexuals have HIV/AIDS	105	41	39.0%	40	6.7	(2.8-19.7)	0.533
People who have HIV/AIDS is expelled from the community	104	24	23.1%	24	6.7	(3-21)	0.891
People who have HIV/AIDS have the right to be loved and cared by his/her family	105	85	81.0%	84	10.0	(3.8-20)	0.089
People who have HIV/AIDS have the same rights as those that do not have it	105	84	80.0%	83	10.0	(4-20)	0.080
People living with HIV/AIDS are entitled to work	105						<b>0.033</b>
Yes		82	78.1%	81	10.0	(4.5-20)	
No		17	16.2%	17	4.0	(0.8-6.3)	
Don't Know		6	5.7%	6	9.8	(3.4-18.3)	
People living with HIV and AIDS have the right to marry	105	56	53.3%	56	8.5	(4-19)	0.752
People living with HIV and AIDS have the right to have children	105	39	37.1%	39	8.0	(4.3-19.2)	0.209
The children of people living with HIV/AIDS are entitled to attend school	105						<b>0.006</b>
Yes		84	80.0%	83	10.0	(4.5-20)	
No		16	15.2%	16	1.9	(0.8-6.5)	
Don't Know		5	4.8%	5	10.0	(9.5-18.3)	
People living with HIV and AIDS have a right to have sex	105	52	49.5%	52	9.0	(3.3-19.7)	0.916
People outside of the community brings HIV/AIDS	105	67	63.8%	66	8.0	(3.2-19.3)	0.382
People who returns to their community bring HIV/AIDS	105	57	54.3%	56	6.3	(3-19.2)	0.313
People living with HIV/AIDS are entitled to free medical treatment	104	89	85.6%	88	8.5	(3.3-19.7)	0.475
<b>HEALTH SELF EFFICACY</b>							
It's up to you if you get HIV/AIDS	105	86	81.9%	85	10.0	(4-20)	0.208
If you are infected with HIV/AIDS is a matter of fate	105	27	25.7%	26	7.1	(2.5-20.4)	0.457
If you are infected with HIV/AIDS is the fault of others	105	24	22.9%	23	7.0	(3.3-21.2)	0.951
It takes a lot of information to avoid getting infected with	105	78	74.3%	77	10.0	(4-20)	0.236

HIV/AIDS							
If you adopt appropriate measures, you can avoid getting the HIV/AIDS virus	104	85	81.7%	84	9.0	(3.3-20)	0.099
Much money is needed to avoid getting HIV/AIDS	105	23	21.9%	22	6.0	(2-14)	0.611
If you become infected with HIV/AIDS is a matter of luck	105	31	29.5%	30	6.3	(2-15.4)	0.391
Preventing HIV/AIDS depends on your partner agreeing to use a condom	103	69	67.0%	68	8.0	(3-20)	0.847
It takes a lot of education to avoid getting infected with HIV/AIDS	103	56	54.4%	55	10.0	(4.8-20)	0.369
In order for you to get infected with HIV/AIDS, it depends on your own actions	104	88	84.6%	87	9.0	(3.3-20)	0.602

<sup>§</sup> Spearman Correlation Test, Mann Whitney U-test, Kruskal Wallis Test.

P-values ( $p < 0.05$ ) are in bold. '-- result not valid

Figure 1: Boxplot of Migration Time Away (years)



How long have you lived outside of your community in total? (years)

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## **Vita**

Sandra I. Bejarano graduated with a Bachelors of Science degree in Health Promotion with a minor in Community Health from UTEP in summer 2011. She began the Master of Public Health program in the fall of 2011. She earned the National Commission for Health Education Credentialing: Certified Health Education Specialist in April 2013. She is a member of the Gamma Lambda Chapter at UTEP of the National Health Education Honorary Eta Sigma Gamma, and the UTEP students for public health organization (SPH). She has a passion for helping other and finds great satisfaction in being resourceful in her community. She has been a volunteer at the Hispanic Health Disparities Research Center (HHDRC) since Summer 2010. She has presented in Society for Public Health Education (SOPHE) 64th Annual Meeting in Orlando, Florida (April 2013); Biennial Symposium on Minorities, the Medically Underserved & Health Equity 25th Anniversary Meeting in Houston, Texas (2012, June); Society for Behavioral Medicine (SBM) 33rd Annual Meeting in New Orleans, Louisiana (April 2012); and SOPHE 62nd Annual Meeting in Arlington, Virginia (October 2011). She was published as a second author in a paper titled “Experience Preferred Insights From Our Newest Public Health Professionals on How Internships/Practicums Promote Career Development” in the Health promotion practice journal. She has worked with multiple community partners in various projects like Be Red Cross Ready, disaster preparedness sponsored by the American Red Cross, the Great American Smoke Out sponsored by the American Cancer Society, International AIDS Empowerment, Centro de Salud Familiar La Fe, Stay TEEN Coalition, and Northeast Coalition.

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