Methamphetamine use and mental health. A bi-national comparison of an immigrant community in Southern California and a migration-impacted community in a Mexican Gulf state

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Executive Summary

This report contains a general overview of public health issues associated with methamphetamine use and mental health in the bi-national U.S./Mexico context. It also includes recommendations for public health practitioners, health officials, and researchers in both sides of the U.S./Mexico border. Ultimately, background information, research findings and recommendations are expected to provide concrete guidelines for developing public policy that address the challenges associated with emerging substance abuse patterns and associated co-morbidities in the U.S. and Mexico.

In recent years, academic collaboration between U.S. and Mexican institutions has undergone an important expansion in the scope of activities and research projects –particularly in the area of public health. An important development in this direction is efforts led by a consortium of U.S. and Mexican academic institutions and by the Health Initiative of the Americas and el Programa de Investigación en Migración y Salud, PIMSA. Implemented with an innovative approach to international collaboration that included forming bi-national research teams, PIMSA provided significant support for developing a research agenda focused on examining the impact of migration on mental health and substance abuse. During the 2010 PIMSA funding cycle, researchers affiliated with California State University, Long Beach in California, U.S., and with Universidad de Veracruz in the state of Veracruz, Mexico, responded to the PIMSA initiative and received support to examine the growing use of methamphetamine (MA) in the U.S. and Mexico and its relationship with trans-national mobility and the migration experience. Central to this project was a research proposal to assess comprehensively the extent of MA use and mental health status in bi-national samples of persons receiving drug treatment services in the cities of Veracruz in Mexico; and the city of Long Beach in California. A project of this magnitude was, of necessity, pilot in nature since international collaboration for a much larger project would have required significant input from large jurisdictions including two countries, the US and Mexico, two states, California and Veracruz, and various county and municipal localities, (e.g. Veracruz and Long Beach). With this caveat in mind, the present report outlines preliminary findings from this pilot project, and to the extent that the evidence gathered by this pilot project allows it, provides policy recommendations –derived from both the pilot data and the larger framework of issues surrounding the U.S./Mexico relationship-- for addressing in a transnational context substance use and mental health among individuals in Mexico and the U.S. impacted by the bi-national migration experience.

Methamphetamine use is a major public health problem in the U.S. and Mexico today. In the United States, it is particularly prominent in highly ethnically diverse populations of the Southern California region. Considered by many the birthplace of the MA epidemic in the U.S., the Southern California region is an area also known as one of the most highly internationally integrated regions in the world. Yet, despite this integration and the growing bi-national Mexico/U.S. impact of common substance abuse epidemics, little is known about the underlying psychosocial factors affecting substance abuse among this highly integrated and diverse population of the U.S./Mexico border. Although many studies have examined previously immigration-related variables and substance dependence, most of these studies are focused on immigrant communities whose members have little contact with their home countries and societies. The U.S. population of Mexican and Central American heritage presents a different contextual substrate: highly integrated communities in all these regional countries co-exist side by side with a growing two-way influx of individuals and families. This demographic context is where the MA abuse epidemic is taking hold of large communities with surprisingly similar patterns in each of the nations impacted by the U.S.-bound migration experience. Despite these similarities, however; there remain important differences in the epidemiology of methamphetamine use. For example, in the present study, women in the U.S. sample, comprised a significantly large proportion of users when compared to their Mexican counterparts. The findings presented in the final report discussed in greater details differences and similarities of substance abuse patterns and mental health status in the bi-national samples.

Recommendations intended for the public health sector in the State of California

1. Address and recognize the growing impact of methamphetamine use among Latinos in immigrant communities of the state of California
2. Address significant cultural differences and recognize the need to consider these differences when creating innovative substance abuse intervention programs
3. Consider the growing interconnectedness between Latino immigrants and communities in their home countries when developing culturally and linguistically models for substance abuse prevention and treatment
4. Acknowledge unique cultural and familial factors such a trans-border residency, forced relocation, threats to family integrity, and others when devising intervention models for persons jointly affected by substance abuse challenges and mental health disorders.

5. Improve access to drug treatment and mental health services for Latino immigrants regardless of their immigration, citizenship status, and ability to pay for these services.

Recommendations intended for the public health sector in the State of Veracruz

1. Recognize the importance of trans-border residency among a growing number of individuals in Mexico impacted by MA and other drugs use
2. Having one of the largest population of individuals in MA drug treatment, California may offer an important source of lessons and experiences that may be adapted by the Mexican public health sector combating emerging addiction problems in the Mexican nation
3. Expand efforts to make substance abuse treatment less stigmatized in Mexico
4. Continue close and sustained collaboration among all governmental agencies, non-profit organizations and community-based groups working in the field of substance abuse prevention and treatment.

Recommendations intended for enhancing international collaboration between the U.S. and Mexico

1. Support local, national, and bi-national research efforts developed to expand mental health and substance abuse research in U.S. and Mexican communities impacted by migration
2. Strengthen institutional capacity on both sides of the border for international collaboration and partnerships
3. Expand joint U.S./Mexico drug treatment monitoring programs, and establish close collaboration for epidemiologic surveillance of emerging drug use patterns in areas particularly hard-hit by the methamphetamine use epidemic (e.g. the U.S./Mexico border region)

The U.S. and Mexico are experiencing growing socioeconomic integration. Cross-national comparisons of patterns of substance use and abuse in this region may assist policy-makers, researchers and drug treatment providers in identifying risk and protective factors in a population affected by socioeconomic integration trends of the last decades. Despite the accelerated pace of socioeconomic integration, and the size of a floating population represented by the trans-border two-way influx of immigrants, there still exist important cultural, legal and historical factors that

differentiate the U.S. and Mexico. Yet, drug abuse, particularly methamphetamine use, appears to be emerging as an equalizer of these differences, as a common ground in which intersecting cultural dimensions collide, supersede each other and the final instance, create unique challenges for designing public health prevention programs. Future studies based on international comparisons of drug abuse data should also consider the influence of different policy approaches, drug treatment infrastructure and modalities, and cultural factors that uniquely shape commonalities and differences in bi-national patterns of substance abuse. In a larger context, public policy should be developed on both sides of the border to address the unique public health problems associated with growing economic and demographic integration in the border. While marked socioeconomic differences are still the defining feature in the U.S. and Mexico, the region is also emerging as a distinctive common epidemiologic space, with similar public health concerns on both sides of the international border. Until recently, the overwhelming emphasis of bi-national public policy development has been placed on trade and commerce; additional efforts should be directed to the development of cross-national policy, evidence-based interventions, and cultural studies to address the growing problem of common substance abuse epidemics in the U.S. and Mexico.

Abstract

This study examined patterns of substance use and mental health status in a bi-national sample of methamphetamine users in the U.S. and Mexico. There were 80 and 62 participants in the City of Veracruz, Mexico and City of Long Beach, California, respectively. Subjects in both study sites provided answers to a comparable standardized drug-use survey questionnaire that included an assessment of drug use risk behavior (with an emphasis on methamphetamine use), sexual behavior and mental health status. All participants in both samples were recruited in drug treatment facilities serving a large urban population in both countries. In this study, important similar patterns of drug use emerged in both samples. However, there remain remarkable differences in the distribution of demographic and risk factors associated with methamphetamine use, and with the distribution of indicators of depressive symptomatology. As a result of growing socio-economic integration between the U.S. and Mexico, drug use patterns, particularly emerging epidemics of synthetic drug use in Mexico, closely resemble the early experience of methamphetamine use in the U.S. In multi-ethnic societies with a significant one-way immigration experience (e.g. the U.S.), mental disorders and other psychosocial factors appear as co-morbid conditions associated with substance use, and are moderated or amplified by the immigration experience. The intense trans-border familial, economic and demographic exchange of the U.S./Mexico North American region presents a unique cultural context for the configuration of substance abuse patterns and mental health disorders. International collaboration for the prevention of common drug use problems will increasingly be needed to devise effective intervention programs for at-risk populations in the U.S. and Mexico.

Section I. BACKGROUND

1.1 Ethnic Identity, Migration and Substance Abuse in the U.S and Mexico

The link between migration, ethnic identity, adverse outcomes in mental health and increased risk for substance misuse and abuse has been recognized in variety of cross-national and international studies [1-3]. A fundamental factor in understanding this link is changes in group membership that occurs when migrant individuals are uprooted from their primary cultural milieu and inserted into a new cultural realm. From a human developmental perspective, this process is accompanied by the appearance of new challenges and stressors, which are critically important particularly among children, adolescents and young adults. Radical transformations in attitudes, feelings and behaviors related to one's sense of belonging to a group are often the psychological substrate of increased vulnerability to substance abuse and mental disorders [4, 5]. Until the emergence of massive migratory flows of the 1970's and beyond, international migration patterns driving these psychological phenomena were considered a one-way channel, typical of early outbound European migration, whereby individuals migrating from one culture to another underwent an intense immersion into the newly adopted culture, and a gradual severance of connection with the mother culture. However, worldwide economic, social and demographic integration as well as modern communication technologies has forced many to re-examine this way of thinking, and it is now recognized that migration has become in many instances a two-way channel in which migrants are frequently forced to live in two drastically different cultural worlds: the world of "receptor" communities in developed nations and the world of "expulsor" communities in their home countries [6, 7] [1]Emblematic cases of this two-way pattern are migration of Andean communities to Europe, African immigrants to Europe, and more prominently the recent migration experience of individuals of Mexican descent to the U.S. In each case, migrants never sever completely their connection with their communities and a culturally ubiquitous form of existence takes place [8]. The implications for the mental well-being and vulnerability to substance abuse of individuals in "receptor" and "expulsor" communities are countless yet little is understood about the dynamics of these phenomena. For example, the traditional view of substance abuse among immigrants in the U.S. has focused almost exclusively on increased levels of drug/substance involvement among immigrants physically residing in U.S. communities when compared with their counterparts in their home country. However, "expulsor" communities in Mexico are now also

[1] The terms "receptor" communities refers to U.S. communities with a significant inbound Mexican migratory flow. "Expulsor" refers to communities in Mexico experiencing a significant outbound migratory flow to the U.S. Although of limited use in the U.S. literature, these terms are extensively used by Mexican researchers and federal and state agencies to describe the migration experience in Mexico.

experiencing significant increases in substance abuse problems, which are in turn associated with sustained and increasing migration-driven cultural exchange between the U.S. and Mexico. Further, the psychological well-being and emergence of significant adverse mental health outcomes among family members and other relatives of immigrants left behind in "expulsor" communities is another area that has just begun to be assessed in its true dimension [5]. Partially the result of more than a decade of economic and trade integration after passage of the North American Free Trade Agreement (NAFTA) between the U.S. and Mexico in 1992, migration patterns between the U.S. and Mexico has reached now a fluid state in which public health, particularly mental health and substance abuse challenges have a true bi-national impact. Increasingly, it is becoming nearly impossible to understand U.S./Mexico substance abuse problems in isolation. The proposed study was conceived as a pilot preliminary study, and sought to examine and compare cultural identity and migration factors associated with emerging substance abuse patterns, i.e. methamphetamine use, and mental health correlates in a bi-national sample of individuals in substance abuse treatment recruited in Southern California and the Gulf of Mexico coastal state of Veracruz. Specific goals of this study are described later in this document.

1.2. Overall trends in substance abuse and mental health among migrants

Understanding substance abuse among and mental health of individuals residing in U.S. area heavily influenced by the migration experience requires complex levels of inquiry. It is estimated that nearly 12 million immigrants live in the U.S. today. This large demographic population can be in turn subdivided in various subgroups; e.g. first- and second-generation immigrants, long-term residents, and recent entrants. Further, from a public health perspective an examination of immigrants and substance abuse necessitates that a distinction is made between the large, functional household population potentially at risk for alcohol and drug abuse involvement and the smaller but growing subpopulation of immigrants that require and have utilized drug and mental health treatment services. Of particular interest for this research effort is the latter group. Specifically, this study focused on immigrants in drug and/or mental health treatment and who are considered relatively recent entrants to the U.S., and their treatment-receiving counterparts in Mexico. In the U.S., despite their growing numbers, little is known about this subpopulation, but partial evidence points to a greater risk associated with Mexican immigrants when compared to other nationalities. A multi-city study of Mexican-born, recent entrant injection drug users in the U.S. found that these subjects show a higher level of IDU risk behaviors when compared to U.S.-born subjects. Of particular concern was the finding reported in this study that knowledge of HIV transmission and AIDS risk is rudimentary in this

population [9]. Other studies among drug-using migrant farm workers have found similar patterns of increased risk. Specifically, frequency of drug use and greater sexual risk behaviors between migrant farm workers and their sexual partners was determined to be associated with distorted perception of AIDS susceptibility [10]. Epidemiologic evidence on excess risk among recent immigrants remains inconclusive. While rates of illicit drug use are lower among immigrants when compared to U.S. born adults, length of U.S. residency is associated with greater involvement with alcohol and illicit drug use [11]

1.3. Methamphetamine Use

Although several studies have reported greater prevalence of methamphetamine use among Caucasian when compared to Black and Latinos [12, 13], recent trends indicate that methamphetamine use is increasing in geographic areas with high concentration of Latino immigrant population [14] and that adverse treatment outcomes and greater psychological co-morbidity are more frequent among Latinos when compared to Caucasians [15, 16]. Further, in areas with a significant U.S./Mexico demographic integration, i.e., the California/Baja California region, methamphetamine is now the leading primary drug reported by persons obtaining new admission to drug treatment [17].The impact of methamphetamine use is particularly stronger among Latino young adults and women. Drug treatment surveillance data show that in California, methamphetamine has now surpassed alcohol and other drugs as the primary drug at admission in drug treatment facilities among women [18]. Similarly, the extent of methamphetamine use among adolescent and young adults in California mirrors the situation at the national level: small but steady increases in the number of individuals being admitted to drug treatment as a result of methamphetamine use [19].

1.4. Mental Health

Unique neurological, psychological and cognitive impairment and disability are associated with the Latinos, acculturation and immigrant experience [20]. Among individuals receiving drug treatment services, co-morbidity with psychological impairment is high; however, frequency and severity of specific disorders are not well characterized among immigrants in the U.S. [21] [22]. Mental health issues among Latinos in general and immigrants in particular in the U.S. are complex and variegated [23]. From anxiety and mood disorders [24] to Post Traumatic Stress Disorder PTSD [25] and major depression and more severe mental health outcomes [26], Latino immigrants in the U.S. appear to be at increased risk for these disorders. Of particular interest is the finding that the specific experience of migration is a strong predictor of onset of anxiety and mood disorders [24]. Prospective immigrants

may begin their journey to a new culture as healthy individuals but the very act of relocation is associated with new stressors, which are in turn correlated with psychological impairment, and greater vulnerability to alcohol and substance abuse involvement.

1.5. Substance Abuse in Mexico. Overall trends

Nationwide, major sources of drug use data in Mexico include la Encuesta Nacional de Adicciones (ENA) [27] [28] and drug treatment surveillance from Sistema de Vigilancia Epidemiologica de las Adicciones (SISVEA) . Implemented by the Mexican Minister of Health, the most recent ENA survey reports that the prevalence of lifetime drug use is 3.5 million persons age 12 to 65, corresponding to 5.5% and 3.4% of the urban and rural population, respectively. At the national level, marijuana, cocaine, and to a lesser degree crack and methamphetamine are among the most commonly reported substance used in the ENA survey. Year 2007 treatment data from SISVEA's most representative catchment areas, and compiled as "droga de impacto" (primary substance) and "droga de inicio" (drug used at initiation) show that among persons seeking admission to these drug treatment facilities, alcohol (31.5%), followed by cocaine (23.4%), methamphetamine (16.3%) and heroin (10.5%) were the main primary substances reported (drogas de impacto). Among illicit substances, the main substance reported used at initiation was marijuana with approximately 32% of cases mentioning it. After marijuana and with prevalence ranging from ~1% to 5%, cocaine, methamphetamine and heroin were among the most commonly reported drugs used at initiation [29]

1.6. Methamphetamine Use in Mexico

Historically, the Northwest Mexican state of Baja California along the border has been considered the top region for methamphetamine use. With double digit increase from the mid-1990's to the early 2000, and current prevalence 10 times greater than the national median, methamphetamine is considered now the main "droga de impacto" in major Mexican metropolitan cities along the California/Mexico border [30]. In the rest of the country, methamphetamine use, although less prevalent than in the northern Mexican border, it has now displaced cocaine and heroin as the main "droga de impacto". According to SISVEA surveillance data, in 1994 of the three major illicit drugs, cocaine, heroin and crystal (methamphetamine), methamphetamine had the lowest prevalence as "droga de impacto" among persons admitted to drug treatment facilities. In 2007, methamphetamine is nationwide the leading "droga de impacto" with a prevalence of approximately 15%, five percent points above cocaine and heroin [29]. Drug treatment surveillance data provide one of the most solid pieces of epidemiologic evidence on the level of the methamphetamine use in Mexico. However, drug

interdiction of methamphetamine and methamphetamine chemical precursors (ephedrine and pseudoephedrine) also offers a dramatic indication of the extent of the problem in the population at large, outside of drug treatment facilities. In the past five years, record seizures of methamphetamine precursors have occurred in Mexico [31]. An emblematic case of this trend but not necessarily the only one is the recent disappearance of more than one ton of ephedrine from a pharmaceutical warehouse in Mexico City. According to media reports, such amount could be used to manufacture up to 230 million individual street doses of methamphetamine [32].

1.7. Mental Health

Health institutions and researchers in Mexico have amassed a vast amount of data on mental health in the general population and subgroups at greater risk for these disorders [33]. Of particular interest are epidemiologic studies of substance abuse and associated mental health co-morbidities among adolescents and young adults, a population particularly vulnerable to these disorders and more likely to experience the impact of migration-related stressors. Recent evidence from la Encuesta de Exclusion, Intolerancia y Violencia in Mexico shows that 54.6% of youth in Mexico admitted feeling of sadness and failure, and 13.3% have suicidal ideation or have attempted suicide [34] Greater prevalence of suicidal ideation and suicidal attempts has been observed in Mexican states with a significant number of communities affected by migration. For example, of all 32 Mexican states, the top ten states with greater prevalence of this disorder include Oaxaca, Jalisco and Distrito Federal. Specific, tailored assessment of these disorders will be needed in the future to implement successful interventions [34]

1.8. Economic integration, globalization and the burden of disease in migration-impacted communities.

From a public health perspective, the phenomenon of migration has long been recognized as a critical factor impacting the burden of disease, disability and early mortality in both “expulsor” and “receptor” communities in developed and developing countries. Given the systemic demographic exchange between the U.S. and Mexico, understanding how migration increases the burden of morbidity and mortality is critical for service planning and intervention. Much of the literature on health and migration in the U.S. recognizes that economic integration and globalization will continue at a sustained pace and that the demographic exchange between the U.S. and Mexico will in turn continue to generate new challenges in all bi-national areas of public health and public health policy. In Mexico, public health experts agree that the impact of migration requires a closer scrutiny of mental health, health services utilization and health practices in communities heavily impacted by the labor migration to the U.S. Currently, the Mexican National Institute for Public Health is conducting an assessment of

mental health and migration in rural communities in historical "expulsor" regions of central Mexico (Guerrero, Oaxaca, Puebla). However, other Mexican Southern states are steadily joining the rank of "expulsor" regions as well. The state of Veracruz, with state boundaries adjacent to Oaxaca, and Puebla is one of the relatively "newcomers" to the phenomenon of U.S.-bound labor migration. Until the mid 1970's, Veracruz had experienced a positive balance in domestic and international outbound and inbound migration. In other words, more persons were moving to the state than leaving it. However, in the 1990's and early 2000's, this trend began to be reversed and U.S.-bound migration is now a significant component of this outbound migration [35] According to recent statistics, Veracruz is now among the one of the sixth major "expulsor" states of international, mostly U.S.-bound migrants; and has displaced historical "expulsor" states like Zacatecas and Oaxaca [36].

Section II. OBJECTIVES AND METHODOLOGY

2.1. Objectives of the study

The results presented in this report are based on cross-national, cross-sectional examination of drug use, mental health indicators, cultural factors, and in- and out-migration experiences of a bi-national sample of adults recruited at drug treatment service facilities in the state of Veracruz, Mexico and the City of Long Beach, California, U.S.A. Specifically, the study objectives were to:

- examine and compare cultural identity and migration-related factors associated with illicit drug use and indicators of depressive symptomatology in a sample of individuals recruited in drug treatment settings
- recruit a bi-national sample of individuals in drug treatment in a Mexican community in the Gulf of Mexico coastal state of Veracruz and in Southern California, U.S.
- describe methamphetamine use risk behaviors and mental health correlates associated with migration experience and cultural affiliation in this bi-national sample.

2.2 Study Instruments

The survey instruments were developed from existing measurements; however, full comparability will not be possible since some measures are relevant only within the contextual domain of the recruitment venues. Comparable instruments of the survey instruments are described first, followed by U.S.-specific and Mexico-specific measurements.

2.3 Common survey instruments Illicit Drug and Methamphetamine Use Survey Instrument

Dr. Lopez-Zetina has previously used this instrument with U.S.-based and Mexican-based populations of persons in drug treatment. The survey contains detailed questions probing lifetime and recent (prior to treatment) use of major legal and illegal substances. A detailed survey component assessing methamphetamine use and initiation to methamphetamine use and other risk behavior is also included in this instrument.

2.4 Depressive symptomatology

The Center for Epidemiologic Study Depression scale was used in both samples. Although unresolved issues remain concerning the suitability of this instrument for use in multi-ethnic population, the CES-D has been extensively used in Mexico and as recent as year 2008, the scale was used by the Mexican Minister of Health to assess the mental health status of high school students [34]

2.5 U.S. site-specific instrument. Ethnic Identity and Immigration-associated factors

Ethnic Identity. The 14-item multi-group ethnic identity measure (MEIM) will be used to assess ethnic identity in the U.S. based sample. This measure has been used with Latino adolescents and adults with good reliability [37-39]. For the purpose of the proposed study, additional items have been developed and appended to reflect important indicators of cultural affiliation to the home country among Mexican immigrants. A set of questions designed to evaluate transnational experience in the U.S. sample has been adapted from existing survey instruments used among Latino immigrants in the U.S. and cross-national U.S./Mexico research [8, 40].

2.6 Mexico site-specific instrument

The impact of migration among Mexican participants was evaluated with the use of items developed from a survey on migration conducted in 2002 by the Mexican Instituto Nacional de Estadistica, Geografia e Informatica, INEGI. Although questionnaire items developed based on this survey are not specifically designed for use in substance abuse populations, the items have been modified to reflect the distinctive needs of the study [41]

2.7 Study Population and Catchment venues

The catchments areas for the study were determined independently by each of the bi-national Principal Investigators. Recruitment venues were similar insofar as they were agencies serving a population of adults in need of outpatient drug treatment services. Participants were recruited from drug treatment facilities with a representative distribution of men and women. Subjects who were recruited at each national site(s) met the following inclusion criteria: (a) ages between 18 or older, (b) able to sign a consent form in English or Spanish, and (c) self-reported history of methamphetamine use or other

illegal substances. Identification of eligible participants was carried out with a short screening instrument designed with differential filter items appropriate for each site. Prior to the implementation of the screening instrument, the bi-national research team canvassed participating drug treatment facilities to determine the size of the potentially eligible population. After eligibility was determined, participants were then invited to participate in the study with all appropriate and applicable safeguards for the protection of human subjects. Each research team was responsible for obtaining appropriate clearance from their corresponding board/committee for the protection of human subjects.

2.7.1 Characteristics of the recruitment venues in Mexico

The Mexican research performance site was the Institute of Public Health at the University of Veracruz, (UV). The University of Veracruz is the largest institution of higher education in the state of Veracruz. A teaching and research unit of the University of Veracruz, the Institute's main academic goals are training of medical and allied health professionals seeking post-baccalaureate education, and generating new knowledge in the field of public health.

The survey administration was implemented at two drug treatment sites. Located in the City of Veracruz and the adjacent city of Boca del Rio, these drug treatment centers offer primary care for individuals affected by drug abuse and dependence, and operate with a comprehensive intervention model aimed at improving the lives of their clients, their families and the community. With a large staff of drug treatment and prevention professionals including medical doctors, psychologists, social workers and administrative personnel, the drug treatment sites have the capability of offering their services free-of-charge.

The Institute of Public Health's internal unit responsible for overseeing compliance with the protection of human subjects involved in research is El Consejo Técnico (Technical Council). The Technical Council's evaluation and approval protocol was implemented and the study was duly approved by the University of Veracruz' Sistema de Registro y Evaluación de la Investigación (Research and Evaluation Registry System).

2.7.2. Characteristics of the Long Beach, California Recruitment Venue

The U.S. research performance site was California State University, Long Beach. The Long Beach campus of the California State University system is the largest in the state and is located in area known for its great ethnic and cultural diversity. Study participants were recruited at a drug treatment center providing services to the recovery community in Long Beach. The wide array of treatment services offered by the agency include residential and outpatient care, ancillary supportive services and transitional housing for clients in need of temporary shelter. Licensed and certified by the state of California, the center also offers drug treatment modalities for individuals under correctional supervision in the state of California. Strict mechanisms for the safeguard of privacy and confidentiality and the protection of human subjects were implemented in this cross-national survey. As former member of the CSULB Institutional Review Board, IRB, Dr. Lopez-Zetina has extensive experience in evaluating research protocols with full compliance with guidelines for the protection of human subjects. Further, Dr. Lopez-Zetina has been the recipient of an award by the CSULB Ukleja Center for Ethical Leadership. The award, intended for dissemination of Dr. Lopez-Zetina's expertise on the protection of human subjects and international research cooperation, was received in 2008 (No Author, 2008). The protocol for the protection for human subjects at CSULB was initiated and completed during the period November 20, 2012 to November 19, 2013 (see appendix 4).

Section III. RESULTS

Eighty and sixty-two participants were ascertained into the study in Veracruz, and Long Beach California, respectively. Attached as appendix A, Tables 1 through 6 provide a descriptive examination of the different domains of the study.

3.1. Demographic Characteristics

Table 1 displays demographic characteristics of the bi-national sample. Approximately similar distribution of characteristics included age and marital status. However, the samples were notoriously different in their sex distribution. The Mexican sample was mostly composed of males whereas the U.S. sample was approximately evenly distributed among male and female participants. Despite growing awareness of significant ethnic diversity in certain Mexican states along the Gulf of Mexico region, the majority of the population in Veracruz falls within one single definition of ethnicity. Thus, all Mexican participants were reported as "Latino". In the race/ethnic distribution of the U.S. sample

Latinos accounted for the largest group, followed by Caucasians, Africa-Americans and "Others". The labor and social welfare structures in the U.S. and Mexico are vastly different, and these differences were reflected in important dissimilarities in sources of income reported by participants. The largest category of source of income in the Veracruz sample was regular employment. In contrast, the largest category among Long Beach participants was disability and/or unemployment benefits.

3.2. Drug Use Risk Behavior / methamphetamine users

Table 2 displays patterns of substance abuse among participants who reported methamphetamine (MA) use. Participants in this subsample were mostly male with relatively similar age of initiation to MA use. Important differences emerged when examining route of MA administration. The majority of the Long Beach sample (68%) reported smoking while the greatest proportion of participants in Veracruz (43%) reported oral route of MA use. In contrast with participants in the Mexican sample who reported a peak use of daily use (7%), nearly one-fourth of all Long Beach participants reported a peak use of daily use in the past twelve month prior to the last time they used MA. Use of MA in social settings and with sex partners appeared similar in both samples. However, a greater proportion of participants in the Mexican sample (93%) reported use of MA in transient venues when compared to the U.S. sample (57%).

3.3. Polydrug Use: Most Commonly Reported Substance

Among users of illegal substances, polydrug use is a common behavior. Table 3 shows the proportion of participants who reported concurrent use of illegal substances. In both samples, the great majority of participants reported use of legal substances (tobacco and alcohol). Among illegal substances, the three most commonly substances reported in the Long Beach sample were marijuana, ecstasy and crack. Corresponding figures in the Veracruz sample were marijuana, cocaine, and crack. Ages at first use of legal and illegal substances were highly similar, and participants from both sites showed a similar pattern of age progression from legal substance to illegal substance use. In both samples, the youngest age of use is reported for legal substances (alcohol), with intermediate age progression of use of "soft substances" (marijuana), and older age progression of first use for "hard substances" such as cocaine. For the most part, this pattern of age progression of use of "hard" substances was similar among methamphetamine users.

3.4. Initiation to Methamphetamine Use

An important goal of the study was examining the growing impact of methamphetamine use in communities in Mexico affected by out-migration and returning migration of the last decade. While the proportion of participants in Veracruz who reported MA use was much smaller than the proportion of users in Long Beach, patterns of MA use in the bi-national sample showed important similarities. Table 4 shows characteristics of initiation to MA use. Among similarities found in both samples, resilient aspects (e.g. rejected MA before first time use) was reported by 50% of participants in the sample. Also, a relatively equal proportion of participants in both samples reported being sober the first time of MA use. One of the most important differences in patterns of MA use was the greatest social use of MA in the Mexican sample. Nearly all participants in Veracruz reported watching other people take MA. In contrast, less than 50% of Long Beach participants reported this behavior. A second striking difference was the number of persons present at first time of use. In Long Beach, the mean number was 4 persons whereas the corresponding figure in Veracruz was 59 individuals.

3.5. Sexual Risk Behavior

Illegal drugs in the category of stimulant substances are often used for enhancing sexual performance. Table 5 shows sexual risk behavior of all participants in the study. Similar age of sexual initiation (15 years) was reported in both samples. Similar inconsistent use of condom use with sex partners was reported by both samples (84% and 78% in Long Beach and Veracruz, respectively). In general, participants in Long Beach were more likely to report greater involvement of MA use in sexual activities when compared to the counterparts in Veracruz.

3.6. Depressive Symptomatology

The presence of depressive symptoms in both samples is reported with different methodology and separately because of the ongoing effort to validate the depression scale for use in the Mexican sample. However, preliminary findings indicate that the frequency of adverse depressive symptomatology among Long Beach participants is high. Fifty percent of men and women met criteria for depression. By other demographic indicators, Long Beach participants also exhibited high prevalence of depression. Table 6.0 shows that Latinos(as) reported the highest prevalence of depression, followed by ethnicities categorized as “other”, Caucasian and African-Americans. Educational status, at least as categorized in the analysis, does not differentiate in the prevalence of depression. Both participants with less than high school, and those with educational attainment greater the high school showed

similar frequency of depression indicators. Among Mexican participants, prevalence of depressive symptoms ranged from one to fourteen percent. Items that scored high in term of prevalence included "I had trouble keeping my mind on what I was doing", "I felt that everything I did was an effort", and "My sleep was restless." As of the date of submission of this report, the bi-national team continues to perform methodological analyses to ensure proper validation of the depressive symptomatology scale. Future analyses will include comparative examination of participants who meet criteria for depression in both samples. Further, detailed subgroup analyses are being planned to assess the prevalence of depressive symptomatology by demographic characteristics of the bi-national sample.

Section IV. DISCUSSION

The present analysis has shown that while important cross-national differences in patterns of substance abuse remain relevant, there also exist remarkable similarities in certain patterns of use in these bi-national samples. Epidemiologically speaking, both sites represent a common epidemiologic space with a growing proportion of individuals reporting methamphetamine-use. Among various domains of drug use risk behavior, age trajectories to drug use are clearly indicative that graduation to "hard" substance use (methamphetamine use) is preceded by initiation to alcohol and "soft" substance use, e.g., marijuana. The spread of methamphetamine use from relatively small subpopulations to larger populations in the U.S. first[42] and later from the U.S. to Mexican border areas has been reflected on drug treatment statistics for the past few years. While increases of methamphetamine users in treatment have been observed in California, particularly in the late 1990's, current trends point to a stable prevalence of treatment cases. In the entire country of Mexico, an increase of methamphetamine users, both male and female cases, was observed during the past two decades. This pattern of increasing drug use, diffused from high prevalence to low prevalence areas, has important public health implications for the spread of other morbid conditions associated with substance abuse, particularly in international areas where economic integration, culture or language promotes the free movement of persons across borders. [43] Further, methamphetamine use has been long recognized as a contributing factor to the spread of HIV because of its harmful effects on the immune system,[44] and because of the riskier behaviors associated with its use.[45] Although the present analysis discusses important similarities and differences in drug abuse patterns from treatment cases in two international settings, (Long Beach and Veracruz) it is important to recognize that differences and commonalities in drug abuse patterns are strongly influenced by treatment modalities unique to each national setting. For example, the impact of treatment policies in California, e.g., Proposition 36, [46]

along with other country-specific factors, should be considered when interpreting these results. Presently, there are not any comparable treatment policies in place in the Mexican state where the City of Veracruz is located; and conceivably, differences in drug use patterns identified among cross-national populations in treatment may be an artifact of differences in treatment options.

Cultural factors associated with substance abuse have been extensively studied [47] yet little is known about the specific pathways in which culture may influence drug-using behavior. A complex and constantly evolving entity, culture may be examined from a myriad angles. The cultural aspect of ethnic identity has received increasing attention as an important correlate of substance use. [48] In the present study, ethnic identity, as measured by the MEIM scale was not particularly relevant in differentiating patterns of methamphetamine and other drug use in the bi-national samples. Methodological as well as substantive issues may be responsible for the inability of the scale to differentiate among the subgroups studied. Cross-national comparisons of drug use data often raise more questions than provide answers and should be interpreted with caution.[49] In particular, methodological concerns such as linguistic and cultural equivalence of survey questions, population and sampling issues, and reporting biases inherent to the treatment data should considered when examining these comparisons. Further, it has been argued that in cross-national comparisons of drug use data, it is rather difficult to separate the "country effect" from "survey methodological effects." [49] Closely linked to this methodological caveat is the issue of the exceptionally distinctive socio-demographic composition of the U.S. and Mexico. The two-way influx of individuals and their families across the border, ongoing and sustained commerce at the region, and the increasing formal and informal cultural exchange among U.S. and Mexican cities have given rise to a unique demographic configuration in which the traditional view of one-way migration and acculturation are no longer sufficient to explain "culture" and its putative influence on substance abuse. In this context of ongoing cultural exchange, family disintegration as a result of massive migration and returning migration, emerging drug use patterns (e.g. methamphetamine use) may be emerging as an equalizer of risk capable of amplifying the negative impact of addictive behaviors.

Section V. CONCLUSIONS

Socio-demographic and culturally, the U.S. and Mexico are experiencing growing integration. Cross-national comparisons of patterns of substance use and abuse may assist policy-makers, researchers and drug treatment providers in identifying risk and protective factors among U.S. and Mexican residents. Despite the accelerated pace of socioeconomic integration, and the size of a floating population represented by growing pedestrian and vehicular border crossings, there still exist important cultural, legal and historical factors that differentiate cities like Long Beach and Veracruz; yet drug abuse, particularly methamphetamine use, appears to be emerging as amalgamating factor equalizing these differences. Methamphetamine use represents a common ground in which intersecting dimensions socio-demographic factors and cultural and national characteristics collide and supersede each other, but ultimately, create a common substrate of risk in both national samples. Future studies based on international comparisons of drug abuse data should also consider the influence of different policy approaches, drug treatment infrastructure and modalities to further characterize commonalities and differences in bi-national patterns of substance abuse. In a larger context, public policy should be developed on both countries to address the unique public health problems associated with growing economic and demographic integration. While marked socioeconomic differences are still the defining feature of the U.S. and Mexico, large regions in both countries are being shaped by common, emerging public health concerns. Until recently, the overwhelming emphasis of bi-national public policy development has been trade and commerce, [50] as well as drug interdiction; additional efforts should be directed to the development of cross-national policy that supports evidence-based public health interventions addressing the growing problem of common substance abuse epidemics in the U.S./Mexico border.

Section VI. DISSEMINATION OF STUDY RESULTS

Preliminary findings from this study have been presented at various academic venues. Dr. Lopez-Zetina presented and discussed the study protocol to researchers and students at the Institute of Public Health, University of Veracruz on June 14, 2012. Subsequent presentations of preliminary findings include a joint presentation by the co-investigators in fall 2012. Titled "Migration, Mental Health and Substance Abuse in the U.S and Mexico" the presentation was part of the 2012 National Hispanic Science Network on Drug Abuse (NHSN) Twelfth Annual Scientific Meeting, "Bridging the Gap in Behavioral Health Services for Latinos", held on September 26–29, 2012, in San Diego, CA.

In May 21st, 2013, Mexican co-investigator Maria Cristina Ortiz and professor Yolanda Campos gave a presentation titled " Mental Health and Methaphetamine Use in Veracruz, Mexico" as part of the H2OLA Seminar series sponsored by Hispanic Health Opportunities Learning Alliance at California State University, Long Beach. Currently, both co-investigators are assisting members of their respective research team in the development of a set of manuscripts that are expected to be submitted for publication in specialized, peer-reviewed research journals.

Section VII. REFERENCES

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Section VIII. APPENDICES

Appendix 1 Study Tables

Appendix 2 National Hispanic Science Network on Drug Abuse (NHSN) presentation program

Appendix 3 H2OLA Presentation flyer

Appendix 4 CSULB IRB Approval letter

Appendix 5 University of Veracruz Sistema de Registro y Evaluación de la Investigación