Complementary and Alternative Medicine Use Among Mexican-Americans for General Wellness and Mental Health

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Abstract
The literature on Mexican-Americans’ Complementary and Alternative Medicine (CAM) use for general wellness and mental health suggests a tendency to use CAM for physical, psychological and spiritual concerns or a combination of both as defined in the culturally bound syndromes. However, the literature contains methodological issues that make it difficult to draw clear conclusions about the patterns of CAM utilization among this population. Forty-one articles from PubMed, PsychINFO, and AltHealthWatch about Mexican-Americans and CAM demonstrated lack of consensus on the modalities considered Hispanic-specific and mainstream CAM, poorly defined samples, and conflicting results about predictors of CAM use such as ethnicity, acculturation, SES, medical insurance status and coverage, and education. More rigorous and culturally relevant research methods, with well defined Hispanic-specific and mainstream CAM are needed to study the use pattern of CAM by Mexican-Americans. Considerations for future research are listed.

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COMPLEMENTARY AND ALTERNATIVE MEDICINE USE AMONG MEXICAN-AMERICANS FOR GENERAL WELLNESS AND MENTAL HEALTH

A THESIS

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>ii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>METHOD</td>
<td>3</td>
</tr>
<tr>
<td>GENERAL THEMES OF THE LITERATURE</td>
<td>4</td>
</tr>
<tr>
<td>Sampling and demographics</td>
<td>4</td>
</tr>
<tr>
<td>Participant selection</td>
<td>6</td>
</tr>
<tr>
<td>Geographic characteristics</td>
<td>7</td>
</tr>
<tr>
<td>CAM modalities</td>
<td>8</td>
</tr>
<tr>
<td>Prevalence of CAM by ethnicity</td>
<td>10</td>
</tr>
<tr>
<td>Prevalence of CAM Hispanic-specific modalities</td>
<td>11</td>
</tr>
<tr>
<td>Commonly used CAM</td>
<td>12</td>
</tr>
<tr>
<td>Acculturation factors</td>
<td>12</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td>15</td>
</tr>
<tr>
<td>Education and CAM</td>
<td>16</td>
</tr>
<tr>
<td>Insurance and CAM</td>
<td>17</td>
</tr>
<tr>
<td>CAM as a treatment</td>
<td>19</td>
</tr>
<tr>
<td>Motivation for CAM use</td>
<td>20</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>21</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>24</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>25</td>
</tr>
</tbody>
</table>
Abstract
The literature on Mexican-Americans’ Complementary and Alternative Medicine (CAM) use for general wellness and mental health suggests a tendency to use CAM for physical, psychological and spiritual concerns or a combination of both as defined in the culturally bound syndromes. However, the literature contains methodological issues that make it difficult to draw clear conclusions about the patterns of CAM utilization among this population. Forty-one articles from PubMed, PsychINFO, and AltHealthWatch about Mexican-Americans and CAM demonstrated lack of consensus on the modalities considered Hispanic-specific and mainstream CAM, poorly defined samples, and conflicting results about predictors of CAM use such as ethnicity, acculturation, SES, medical insurance status and coverage, and education. More rigorous and culturally relevant research methods, with well defined Hispanic-specific and mainstream CAM are needed to study the use pattern of CAM by Mexican-Americans. Considerations for future research are listed.

Keywords: Mexican-American, Mexican, Hispanic, Latino, Alternative Medicine, Complementary and Alternative Medicine (CAM), Folk Medicine
Complementary and Alternative Medicine Use among Mexican-Americans for General Wellness and Mental Health: A Review of the Literature

Hispanics comprise a large and rapidly growing proportion of people living within the United States. Despite the ever increasing demographic importance of the Hispanic population, there has been relatively little research into the mental health needs and effective clinical treatments for Hispanics. It is likely that this population experiences especially great mental health needs. In addition to the concerns commonly faced by members of the majority groups in the United States, Hispanic clients may be more likely to report mental health needs that are affected by immigration and immigration status; language and cultural barriers; discrimination; and socioeconomic marginalization issues (Soto, 2000).

In contrast to the uncertainties surrounding healthcare needs and treatments, there is strong evidence that the healthcare needs of Hispanics are not being met. While disparities in access to healthcare likely play a role in the failure of the US mental healthcare system to address the needs of Hispanics, cultural differences in expectation or experience of treatment are also involved. Few Hispanics seek mental healthcare, and, those who seek treatment often drop out (Olfson, 2009). Therefore, one of the first and most important steps to improving the mental healthcare of Hispanics is the development of culturally appropriate and efficacious treatments for Hispanic clients.

There is some evidence that Complementary and Alternative Medicine (CAM) may serve as a culturally appropriate and effective form of primary or ancillary mental healthcare treatment. CAM is defined as healthcare modalities that are not typically taught in mainstream medical or psychology schools. In one study, use of CAM was associated with significantly reduced odds of
treatment dropout by Hispanics from mental health services other than psychiatry (Olfson, 2009). These findings suggest that incorporating CAM into mental health treatment may be beneficial for members of the Hispanic population.

Mexico has a long history of folk healing called curanderismo that consists of a variety of specialists such as yerberos (herbalists), sobadores (masseuses), and hueseros (bone-setter; Torres, 1984). This ancient system has roots in Moorish culture, Judeo-Christian beliefs, and Aztec healing practices, and offers healing that incorporates the effects of emotions and spiritual factors on the manifestation of physical ailments (Torres, 1984). A plethora of anecdotal evidence exists about the healing power of curanderismo and the prevalence of this practice among Mexican and Mexican-American populations (Torres, 1984). However, as the holistic approach is contrary to the western medical approach to healing, it has not been incorporated into mainstream medical practice (Wozniacka, 2010). There is a need to examine the extent to which the mainstream medical and psychological communities have considered curanderismo and other treatments common among Mexican and Mexican American populations.

The purpose of this review is to highlight the issues and identify trends in the literature about CAM use among Mexican-American populations. As Hispanics are a heterogeneous population, but Mexican-Americans make up the majority of Hispanics living in the U. S. (U. S. Census Bureau, 2007), the scope of this review was limited to studies with Mexican-American participants. It is hypothesized that the empirical research will demonstrate that Mexican-Americans utilize a combination of mainstream CAM treatments and Hispanic-specific CAM at high rates. However, it is also hypothesized that the mainstream empirical research on the topic is insufficient to draw accurate conclusions about the prevalence and utility of CAM treatment in Mexican-Americans due to inconsistently defined populations of Hispanics and a lack of
consensus about the definition of mainstream CAM and Hispanic CAM. As CAM is considered outside of mainstream medical and psychological practice, it is most likely that little empirical research will be found on Mexican-American’s use of CAM as a method to improve overall well-being and to treat mental health issues.

**Method**

A search of the empirical literature on the use of CAM for general wellness and mental health was started by searching Pubmed, PsychINFO, and AltHealthWatch databases. The search was completed by December 2009. Thus, the majority of the articles listed in this review come from a search of the Pubmed database which was provided by the National Library of Medicine of the United States and contains articles from international and domestic journals. Although most journals listed on Pubmed publish information on biomedical and life sciences, Pubmed also includes journals on sociology, psychology, and anthropology.

The search terms “Latino” and “Alternative Medicine” were searched in the Pubmed database, and 256 articles published after 1990 were examined; these search terms encompassed literature about CAM treatments as well as folk medical practices, and the term Latino included articles that included a variety of Hispanic/Latino populations including articles about Mexican Americans. The same search terms yielded 77 articles in PsychINFO and 4 articles in AltHealthWatch. When the terms “Hispanic” and “Alternative Medicine” were searched in AltHealthWatch, 19 articles were listed. It should be noted that there was substantial overlap between the featured articles in PsychINFO, AltHealthWatch, and Pubmed.

From the three databases, 41 articles were selected for this review. Empirical articles that broadly examined the trends of CAM use among Hispanics and/or Mexican Americans were included. Studies examining the efficacy of CAM treatments were not included because they do
not address the research focus of this review: the patterns of CAM use among members of the
Mexican-American population. Studies on CAM treatment for specific mental health conditions
such as depression were included in order to address the research question of implications of this
research for the practice of clinical psychology. Additionally, studies examining CAM use only
for specific health conditions such as diabetes or cancer were excluded. Lastly, two articles were
excluded that explicitly stated that the Hispanic sample was comprised of Central American and
Caribbean populations and did not include Mexican Americans.

General Themes of the Literature

In general, the literature addressed questions related to the prevalence of CAM use as a
whole as well as specific modalities of CAM. Predictors of CAM use by ethnicity, acculturation
level, socioeconomic status, educational level, and insurance status were often examined.
Additionally, descriptive statistics were often provided detailing the percentage of participants
who use a specific type of CAM modality. Lastly, several authors reported participants' motivations for CAM use.

Sampling and Participant Demographics

All of the articles included Hispanic participants, and Hispanic ethnicity was frequently
determined via self-report on demographic surveys (Cherniack et al., 2008; Mikhail, Wali, &
Ziment, 2004; Mehta, Gardiner, Phillips, & McCarthy, 2008; Palinkas, Kabongo, & The
Surf*Net Study Group, 2000; Rivera, Ortiz, Lawson, & Verma, 2002). In one publication,
Hispanic ethnicity was inferred because all participants were Spanish-speaking (Mikhail et al.,
2004). The majority of authors did not explicitly report how race/ethnicity was determined
(Bausell, Lee, & Berman, 2001; Bazargan et al., 2005; Cherniack et al., 2008; Graham et al.,
2005; Grzywacz et al., 2005; Hsiao et al., 2006; Keith, Kronenfeld, Rivers, & Liang, 2005; Kim
et al., 2005; Mehta et al., 2008; Reinsch, Hoehler, & Tobis, 2003; Shelley, Sussman, Williams, Segal, & Crabtree, 2009; Najm, Reinsch, Hoehler, & Tobis, 2003; Ness, Cirillo, Weir, Nisly, & Wallace, 2005; Ni, Simile, & Hardy, 2002; Rivera et al., 2002; Sleath, Rubin, Campbell, Gwyther, & Clark, 2001; Sleath & Williams, 2004; Sunghye, Arcury et al., 2007; Upchurch et al., 2007; Versnik Nowak & Dorman, 2008; Xu & Farrell, 2007).

Of the 41 studies that were examined, 19 determined the Mexican-American sub-ethnicity of the Hispanics in the population (Applewhite, 1995; Burge & Albright, 2002; Chao & Wade, 2008; Chao, Wade, Kronenberg, Kalmuss, & Cushman, 2006; Garces, Scarinci, & Harrison, 2006; Higginbotham, 1990; Trevino, & Ray, 1990; Iniguez & Palinkas, 2003; Keegan, 2000; Kronenberg et al., 2006; Loera, Reyes-Ortiz, & Kuo, 2007; Lopez, 2005; Mackenzie et al., 2003; Martinez, 2009; Mendelson, 2002; Padilla, Gomez, Biggerstaff, & Mehler, 2001; Risser & Mazur, 1995; Sanchez, 2007; Trangmar & Diaz, 2008; White, Knox, Zepeda, Mull, & Nunez, 2009). Furthermore, the ways in which authors determined Mexican heritage varied. Although sub-ethnicity was largely determined by self-report, one study determined sub-ethnicity by the report of employees at the recruitment site (Applewhite, 1995). Seven research groups described participants of Mexican descent as Mexican-Americans if they were born in the US or Mexico (Applewhite, 1995; Iniguez & Palinkas, 2003; Loera et al., 2007; Lopez, 2005; Mendelson, 2002; Sanchez, 2007). However, four groups of authors described only participants born in Mexico as Mexican-American (Burge & Albright, 2002; Padilla et al., 2001; Risser & Mazur, 1995; White et al., 2009). Still, other authors described the percentage of Mexican-Americans living in the geographic location of the study without describing the sample itself (Kronenberg et al., 2006; Trangmar & Diaz, 2008), and one author stated that most participants emigrated from Mexico without specifying an exact number in the sample (Garces et al., 2006). In most cases,
authors did not report how the sub-ethnicity Mexican or Mexican Americans was determined (Chao & Wade, 2008; Chao et al., 2006; Higginbotham et al., 1990; Keegan, 2000; Loera et al., 2007; Mackenzie et al., 2003).

**Participant Selection**

Sample characteristics and recruitment locations varied depending on the authors’ access to populations and on the research questions. In general, authors examined Hispanics in healthcare settings and in the community. Clinical settings varied, with the majority of these studies focusing on primary care services (Burge & Albright, 2002; Iniguez & Palinkas, 2003; Palinkas et al., 2000; Risser & Mazur, 1995; Shelley et al., 2009; Sleath et al., 2001; Trangmar & Diaz, 2008), whereas some took place in hospitals (Kim et al., 2005; Mikhail et al., 2004) or other types of health centers (Cherniack et al., 2008; Padilla et al., 2001; Rivera et al., 2002; White et al., 2009). In studies using nationally-representative community samples, participants were recruited via random telephone digit dialing (Chao and Wade; Chao et al., 2006; Kronenberg et al., 2006) or census data (Arcury et al., 2007; Bausell, et al., 2001; Graham et al., 2005; Grzywacz et al., 2005; Keith et al., 2005; Mackenzie et al., 2003; Mehta et al., 2008; Ness et al., 2005; Ni et al., 2002; Upchurch et al., 2007; Xu & Farrell, 2007). Likewise, random telephone digit dialing was used to recruit a sample in California (Hsiao et al., 2006) and a sample in Texas (Martinez, 2009). Other community samples were recruited from community organizations such as churches (Mikhail et al., 2004), colleges (Lopez, 2005; Versnik Nowak & Dorman, 2008), senior centers (Applewhite, 1995; Najm et al., 2003); from outside of shopping malls (Keegan, 2000); or from a combination of community locations (Bazargan et al., 2005; Garces et al., 2006). In two studies, participants were invited to participate if they were judged to have a Hispanic surname, and ethnicity was later confirmed via self report (Martinez, 2009;
Padilla et al., 2001). One sample was directly selected by the researcher and through participant referrals (Mendelson, 2002), and one study did not specify where or how participants were recruited (Sanchez, 2007).

**Geographic Characteristics**

The studies in this review took place in a variety of regions across the US or included nationally representative samples (Arcury et al., 2007; Bausell, et al., 2001; Chao & Wade, 2008; Chao et al., 2006; Graham et al., 2005; Grzywacz et al., 2005; Keith, Kronenfeld, Rivers, & Liang, 2005; Kronenberg et al., 2006; Mackenzie et al., 2003; Mehta et al., 2008; Ness et al., 2005; Ni et al., 2002; Upchurch et al., 2007; Xu & Farrell, 2007). Specifically, 19 studies examined populations in the Southwestern region (Applewhite, 1995; Bazargan et al., 2005; Burge & Albright, 2002; Iniguez & Palinkas, 2003; Keegan, 2000; Keith et al., 2005; Loera et al., 2007; Lopez, 2005; Martinez, 2009; Mendelson, 2002; Mikhail et al., 2004, Najm et al., 2003; Palinkas et al., 2000; Risser & Mazur, 1995; Rivera et al., 2002; Shelley et al., 2009; Sleath et al., 2001; Versnik Nowak & Dorman, 2008; White et al., 2009), one studied populations in the Southeastern region (Cherniack et al., 2008), one examined Hispanics in the Northeast (Kim et al., 2005), one investigated populations in the Western region (Padilla et al., 2001), and two studied Hispanics in the southern region (Garces et al., 2006; Trangmar & Diaz, 2008). Nine studies took place in California (Bazargan et al., 2005; Iniguez & Palinkas, 2003; Keith et al., 2005; Lopez, 2005, Mikhail et al., 2004; Najm et al., 2003; Palinkas et al., 2000; Versnik Nowak & Dorman, 2008, White et al., 2009) and six took place in Texas (Burge & Albright, 2002; Keegan, 2000; Martinez, 2009; Risser & Mazur, 1995; Rivera et al., 2002; Sanchez, 2007). Select studies specified other demographic characteristics such as the proximity of the border (Martinez, 2009; Rivera et al., 2002).
CAM Modalities

The treatment modalities included in authors' definitions of CAM varied greatly. One study used a variety of modalities from the list of CAM treatments produced by the National Center for Complementary and Alternative Medicine; this list includes medicine systems, mind-body interventions, manipulative/body-based methods, biologically-based medicine, and energy therapies (NCCAM, 2010). Another study used the National Institutes of Health’s Office of Alternative Medicine Classification, which includes Alternative systems of medical practice, bioelectric applications, herbal treatment, manual healing, mind-body control, pharmacologic treatment, and biologic treatment (Sleath et al., 2001). Other authors only included CAM modalities specific to Hispanic cultures, such as curanderos, yerberos, sobadores, hueseros, or espiritualistas. When referring to CAM, most authors included some combination of both Hispanic CAM modalities and mainstream CAM modalities (Bausell, et al., 2001; Bazargan et al., 2005; Burge & Albright, 2002; Chao and Wade; Chao et al., 2006; Graham et al., 2005; Hsiao et al., 2006; Keegan, 2000; Keith et al., 2005; Kronenberg et al., 2006; Mackenzie et al., 2003; Martinez, 2009; Najm et al., 2003; Upchurch et al., 2007; Versnik Nowak & Dorman, 2008; Xu & Farrell, 2007). In contrast, five studies only included Hispanic CAM (Applewhite, 1995; Iniguez & Palinkas, 2003; Lopez, 2005; Padilla et al., 2001; Risser & Mazur, 1995), whereas six studies only examined the use of mainstream CAM (Grzywacz et al., 2005; Loera et al., 2007; Mikhail et al., 2004; Ness et al., 2005; Ni et al., 2002; Sleath et al., 2001). Three studies did not specify if Hispanic CAM was included (Cherniack et al., 2008; Trangmar & Diaz, 2008; White et al., 2009). Although most studies included a variety of CAM modalities, three studies investigated only the use of herbal and/or dietary supplements that are used among Hispanics and other groups in the United States (Arcury et al., 2007; Kim et al., 2005; Mehta et al., 2008).
Variation exists even among those studies that used similar categories of CAM modalities. For example, two studies included a list of a variety of mind-body treatments and biologically-based treatments; however, *curanderismo* was the only Hispanic-specific CAM listed (Hsiao et al., 2006, Kronenberg et al., 2006). One author solely examined the use of *curanderos* among Mexican-Americans (Applewhite, 1995). Other studies also examined a limited assortment of Hispanic CAM treatments that only included the broad category of folk medicine without specifying particular folk treatments (Burge & Albright, 2002; Versnik Nowak & Dorman, 2008). Similarly, two studies limited their definition of Hispanic CAM treatments to homeopathy and traditional medicine (Bausell, et al., 2001; Xu & Farrell, 2007), whereas, in two other studies, Hispanic CAM treatments were classified into broad categories such as remedies or practices associated with a particular culture (Chao & Wade, 2008). The studies that included detailed lists of Hispanic CAM treatments frequently did not examine participant use of mainstream CAM (Lopez, 2005).

Due to the inconsistent definition of mainstream CAM and Hispanic CAM, it is difficult to compare results. For the purposes of this paper, a comprehensive list of the different CAM modalities mentioned in the articles was compiled and the modalities were classified as either mainstream or Hispanic CAM. In this review, the following CAM treatments will be considered mainstream CAM: Relaxation, meditation, yoga, tai chi, imagery, biofeedback, hypnosis, self-help group, spiritual healing, massage, acupressure, therapeutic touch, chiropractic, reflexology, prayer, aromatherapy, herbs, teas, vitamins, acupuncture, homeopathy, bioelectromagnetic therapy, light therapy, colonic irrigation, psychics, metals, and crystals. The following CAM treatments will be classified as Hispanic CAM: Folk medicine, folk healer, *curandero*, *sobador*, *yerbero*, and *espiritualista*. If a study mentioned any of the modalities from the list of
mainstream CAM modalities it was deemed to include a measure of mainstream CAM use, and if the study included any modality from the list of Hispanic CAM modalities it was deemed to include a measure of Hispanic-specific CAM use. Both Hispanic and mainstream CAM groups include the use of herbs. However, for the purpose of this analysis, studies that indicated that herbs were provided by a *yerbero* were included in the Hispanic type of CAM. Those that simply indicated the use of herbs as treatment without specifying who was the provider were included in the mainstream CAM group.

**Prevalence of CAM use by Ethnicity**

Overall, there is evidence that Mexican-American samples use Hispanic and mainstream CAM. The lowest reported rate of CAM use was 2.7% (Xu & Farrell, 2007) when CAM was defined as a combination of Hispanic and mainstream CAM. The highest reported rate of CAM use was 69%, but it is unclear whether this measure included Hispanic CAM (Trangmar & Diaz, 2008). Moreover, Ness et al. (2005) found that a Hispanic older adult sample yielded a 76% rate of mainstream CAM use as the article only included a measure of mainstream CAM use.

Despite data suggesting that Hispanics frequently use CAM, there is also data indicating that the prevalence of CAM use among Hispanics is lower than that among non-Hispanic whites when authors used a combination of Hispanic specific CAM and mainstream CAM (Bausell, et al., 2001; Chao & Wade; Graham et al., 2005). There is also evidence that the prevalence of mainstream CAM use among non-Hispanic white older adults is higher than mainstream CAM use among Hispanic older adults (Ness et al., 2005). One study suggested that Mexican-American women are less than half as likely to use any type of CAM than non-Hispanic white women (Chao & Wade, 2008). Another study showed similar results such that the prevalence rate
of Hispanic CAM and mainstream CAM use among non-Hispanic whites was 36% and the rates for Hispanics and non-Hispanic blacks were 27% and 26% respectively (Graham et al., 2005).

When authors adjusted for covariates such as age, gender, education, and income, results varied. Keith (2005) suggested that Hispanics were significantly less likely to report Hispanic specific or mainstream CAM use when controlling for these variables. However, Kronenberg et al. (2006) found that there were no significant differences between overall rate of CAM use, as defined by mainstream and Hispanic CAM modalities, among Mexican-Americans and non-Hispanic whites after accounting for covariates. Another author determined that all ethnic groups were equally likely to use at least one CAM modality; however, Hispanic ethnicity was associated with high rates of use of home remedies and herbal medicine (Mackenzie et al., 2003). Lastly, in one study, Mexican-American participants used CAM, as defined by mainstream and Hispanic modalities, almost twice as often as non-Hispanic white participants (Keegan, 2000).

**Prevalence of CAM Hispanic-Specific Modalities**

Several studies have reported prevalence rates of Hispanic-specific CAM use among various Mexican-American and Hispanic samples. One author suggested that 26% of highly assimilated Mexican-American women used Hispanic-specific CAM (Lopez, 2005), and another author suggested that 31% of a sample of Mexican-American women at a community health clinic used “ethnomedical practices” and 17.2% used “ethnomedical practitioners” (Iniguez & Palinkas, 2003). Additionally, 29% of Hispanics in another sample reported using a curandero in their lifetime (Padilla et al., 2001), whereas in a study of Hispanic older adults, 8% reported using a curandero in the previous year (Najm et al., 2003). When comparing use of traditional/folk CAM to use of mainstream CAM, one author found that 22% of Mexican-
Americans had used traditional/folk CAM and only 13% had used mainstream CAM in the previous year (Martinez, 2009).

**Commonly Used CAM**

In general, herbal remedies are widely used among Mexican-American and Hispanic samples (Burge & Albright, 2002; Cherniack et al., 2008; Keegan, 2000; Loera et al., 2007; Mackenzie et al., 2003; Martinez, 2009; Mikhail et al., 2004; Trangmar & Diaz, 2008; White et al., 2009). Home remedies are also commonly used (Mackenzie et al., 2003). Other studies reported high rates of consumption of vitamins and supplements in this sample (Kronenberg et al., 2006; Najm et al., 2003; Ness et al., 2005; Trangmar & Diaz, 2008). In another study, 10% of the Hispanic sample reported using biologically-based mainstream CAM treatments (Ni et al., 2002). Although not all studies included prayer as a CAM modality, one study suggested that 55% of Hispanics use this practice to treat health problems (Upchurch et al., 2007), and another suggested that 67% of Hispanics had used prayer in the previous year (Keegan, 2000). One study examined the prevalence of the use of mainstream CAM treatments among Hispanics and reported that massage, aromatherapy, and chiropractic therapy were the most common mainstream CAM practices used by Mexican-Americans (Martinez, 2009). Another study reports that 48% of a Hispanic older adult sample used alternative practices and 23% used an alternative practitioner (Ness et al., 2005).

**Acculturation Factors**

Authors reported a variety of acculturation factors. The most common acculturation variable, used by 12 authors, was whether participants reported being foreign born (Applewhite, 1995; Higginbotham et al., 1990; Iniguez & Palinkas, 2003; Kronenberg et al., 2006; Loera et al., 2007; Mackenzie et al., 2003; Mendelson, 2002; Padilla et al., 2001; Palinkas et al., 2000; Rivera
et al., 2002; Sanchez, 2007; Upchurch et al., 2007). Ten authors reported the number of years participants had lived in the US (Applewhite, 1995; Garces et al., 2006; Hsiao et al., 2006; Loera et al., 2007; Mikhail et al., 2004; Najm et al., 2003; Padilla et al., 2001; Risser & Mazur, 1995; Sanchez, 2007; White et al., 2009), and 10 authors reported participants’ preferred language (Applewhite, 1995; Higginbotham et al., 1990; Hsiao et al., 2006; Keegan, 2000; Loera et al., 2007; Martinez, 2009; Padilla et al., 2001; Risser & Mazur, 1995; Sanchez, 2007; Sleath et al., 2001). Two studies only included those who spoke Spanish as a preferred language (Trangmar & Diaz, 2008; Mikhail et al., 2004), whereas one study only included those who spoke sufficient English to complete the study in English (Mendelson, 2002). Two groups of authors reported whether participants were proficient in English as a measure of acculturation (Bazargan et al., 2005; Mikhail et al., 2004).

Other measures of acculturation included legal immigration status (Iniguez & Palinkas, 2003). One author only included legal residents of the U. S. in the study (Mendelson, 2002). Another author reported whether participants were first, second, or third generation immigrants (Sanchez, 2007). In a different study, the author reported the culture with which participants felt most comfortable (the Mexican culture or the Caucasian culture); some participants reported being equally comfortable with both cultures (Applewhite, 1995). In contrast, one author administered a more quantitative measure of acculturation, the Short Acculturation Scale for Hispanics (Martinez, 2009). Four authors used acculturation measures without specifying the acculturation measures that were used (Burge & Albright, 2002; Higginbotham et al., 1990; Palinkas et al., 2000; Sanchez, 2007).

Although there is conflicting data about the influence of acculturation variables on CAM use, this discrepancy may be due to an inconsistent definition of CAM and the factors included
to define level of acculturation. Overall, three studies reported that at least one acculturation variable was not related to CAM use: Higginbotham et al., 1990 reported that a score on an acculturation measure and nativity were not significantly related to curandero use; Martinez, 2009 reported that participants’ scores on The Short Acculturation Scale for Hispanics were not related to participant’s use of mainstream CAM; and White et al. (2009) reported that CAM use was unrelated to the time participants had lived in the U.S. However, it is unclear whether the definition of CAM used by White et al. (2009) included Hispanic modalities. Two studies reported that at least one acculturation variable was positively related to CAM use: Higginbotham et al. (1990) reported that those who elected to complete the study in Spanish were significantly more likely to report using a curandero, and Burge and Albright (2002) reported that those who were more acculturated to Hispanic culture, as measured by scores on an acculturation scale, were more likely to use herbal remedies and folk practices. Burge (2002) reported that those who were more acculturated to the U. S. culture were more likely to use mainstream manual healing and mind-body CAM techniques.

Five authors reported an inverse relationship between acculturation to U. S. culture and CAM use (Burge & Albright, 2002; Hsiao et al., 2006; Martinez, 2009; Najm et al., 2003; Palinkas et al., 2000). An inverse relationship between CAM use and acculturation was found in the majority of the studies that reported a relationship between acculturation to the U. S. and Hispanic CAM use. Specifically, the use of Hispanic CAM was related to low acculturation to the U. S. culture as measured by an acculturation measure (Burge & Albright, 2002; Palinkas et al., 2000); English proficiency and length of time living in the U. S. (Hsiao et al., 2006); and The Short Acculturation Scale for Hispanics (Martinez, 2009). Likewise, another study reported that use of CAM, as defined by a combination of mainstream and Hispanic CAM, was inversely
related to the number of years participants had lived in the US (Najm et al., 2003). Although the majority of data suggests that those with higher levels of acculturation to the U.S. culture use Hispanic CAM at lower rates than those with higher levels of acculturation to Mexican and other Latin American cultures, it is still unclear if acculturation is related to the use of mainstream CAM.

**Socioeconomic Status**

Other characteristics, such as socioeconomic variables, of the samples in the studies were examined by a number of studies. Socioeconomic status was measured by employment status (Garces et al., 2006; Kronenberg et al., 2006), measures of financial strain (Bazargan et al., 2005), yearly household income (Applewhite, 1995; Arcury et al., 2007; Chao & Wade, 2008; Grzywacz et al., 2005; Iniguez & Palinkas, 2003; Keith et al., 2005; Kim et al., 2005; Kronenberg et al., 2006; Mackenzie et al., 2003; Martinez, 2009; Mehta et al., 2008; Mendelson, 2002; Mikhail et al., 2004; Ness et al., 2005; Padilla et al., 2001; Palinkas et al., 2000; Rivera et al., 2002; Trangmar & Diaz, 2008), whether participants lived at above or below the poverty level (Higginbotham et al., 1990; Keith et al., 2005; Xu & Farrell, 2007), and the level of governmental assistance that the family received (Kronenberg et al., 2006; Mendelson, 2002).

Almost every study included a measure of income or socioeconomic status, but fewer reported the relationship between CAM use and socioeconomic status among the Hispanics in the study. Higher income is commonly related to use of CAM, as defined by a combination of mainstream and Hispanic modalities (Graham et al., 2005; Upchurch et al., 2007). Specifically, income is positively related to manipulative, body-based, and mind-body CAM that is defined as a combination of mainstream and Hispanic specific CAM (Upchurch et al., 2007). A similar study reported that those with a household income of at least $60,000 per year are significantly
more likely to use CAM as defined by a combination of mainstream and Hispanic-specific than those with yearly incomes of less than $20,000 (Chao & Wade, 2008). Another author suggested that income may only be correlated with the use of mainstream CAM (Martinez, 2009). Income was not observed to be correlated to the use of Hispanic-specific CAM (Martinez, 2009), and poverty status is unrelated to the use of a curandero (Higginbotham et al., 1990). Still, another study reported the opposite trend among Hispanics such that CAM users have significantly lower household incomes than non-users (Mikhail et al., 2004). Overall, the majority of studies that include a measure of mainstream CAM use indicate that income is positively related to CAM use; however, it is unclear if there is a relationship between income and Hispanic CAM use.

**Education and CAM**

Educational status was typically measured as the number of years of formal education completed (Applewhite, 1995; Bazargan et al., 2005; Burge & Albright, 2002; Higginbotham et al., 1990; Iniguez & Palinkas, 2003; Loera et al., 2007; Rivera et al., 2002; Sleath et al., 2001) or as the highest educational degree obtained (Arcury et al., 2007; Bausell, et al., 2001; Burge & Albright, 2002; Chao & Wade, 2008; Garces et al., 2006; Graham et al., 2005; Grzywacz et al., 2005; Hsiao et al., 2006; Keith et al., 2005; Kim et al., 2005; Kronenberg et al., 2006; Mackenzie et al., 2003; Martinez, 2009; Mikhail et al., 2004; Padilla et al., 2001; Trangmar & Diaz, 2008, Upchurch et al., 2007; Xu & Farrell, 2007); two articles did not specify how educational status was measured (Mehta et al., 2008; Ni et al., 2002).

Findings on the influence of education on mainstream and Hispanic CAM use are conflicted. Reports suggest that higher education is positively related to mainstream CAM use (Martinez, 2009; Ni et al., 2002; Palinkas et al., 2000); to Hispanic CAM use (Martinez, 2009); to the use of CAM as defined by a combination of Hispanic CAM and mainstream CAM (Chao
& Wade, 2008; Graham et al., 2005; Rivera et al., 2002); and to the use of herbs and vitamins (Arcury et al., 2007; Kim et al., 2005). Studies also suggested that Hispanics with college or graduate degrees are the most likely to use traditional healers (Mackenzie et al., 2003), and that education is positively associated with self-care and herbal CAM use (Palinkas et al., 2000). In particular, one study suggested that education is the strongest predictor of use of mainstream and traditional folk CAM in Mexican-Americans (Martinez, 2009). Likewise, a gradient effect has been reported such that each level of higher education significantly predicts higher levels of CAM use as defined by a combination of Hispanic-specific and mainstream CAM (Chao & Wade, 2008).

Three studies suggested that education is inversely related to use of mainstream CAM or Hispanic-specific CAM (Higginbotham et al., 1990; Mikhail et al., 2004; Palinkas et al., 2000), and one suggested that those with less than 11 years of education had the highest reported use of herbal and home remedies. Likewise, one research team suggested that those with less than seven years of formal education were twice as likely to use ethnomedical practices as those with more than seven years of formal education (Iniguez & Palinkas, 2003). Two groups of authors reported that there was no relationship between education and mainstream or Hispanic-specific CAM use in Hispanics (Hsiao et al., 2006; Loera et al., 2007).

Despite the conflicted findings, the majority of the studies suggest that education may be related to the use of mainstream CAM; however, more research must be done to determine the level of education that best predicts Hispanic-specific and mainstream CAM use.

**Insurance and CAM**

Twenty-three studies provided results from measures of insurance status (Arcury et al., 2007; Bazargan et al., 2005; Burge & Albright, 2002; Chao & Wade, 2008; Garces et al., 2006;
Graham et al., 2005; Higginbotham, 1990; Hsiao et al., 2006; Iniguez & Palinkas, 2003; Keith et al., 2005; Kronenberg et al., 2006; Loera et al., 2007; Lopez, 2005; Mackenzie et al., 2003; Mehta et al., 2008; Mikhail et al., 2004; Najm et al., 2003; Ness et al., 2005; Ni et al., 2002; Palinkas et al., 2000; Trangmar & Diaz, 2008; Upchurch et al., 2007). Insurance status was frequently measured as a dichotomous variable (Bazargan et al., 2005; Burge & Albright, 2002; Chao & Wade, 2008; Garces et al., 2006; Graham et al., 2005; Kronenberg et al., 2006; Loera et al., 2007; Lopez, 2005; Mackenzie et al., 2003; Mehta et al., 2008; Ness et al., 2005; Ni et al., 2002; Trangmar & Diaz, 2008), or participants were asked if they had private or public insurance (Arcury et al., 2007; Burge & Albright, 2002; Higginbotham et al., 1990; Hsiao et al., 2006; Iniguez & Palinkas, 2003; Najm et al., 2003; Palinkas et al., 2000; Upchurch et al., 2007). Only one study measured whether insurance covered mainstream CAM treatments (Mikhail et al., 2004).

Before attempting to compare these studies, it is important to note that almost all of these mentioned studies seem to report insurance status as a demographic variable as they do not report whether participants used insurance to pay for CAM or if their insurance covered CAM treatments. Regardless, it is important to understand that insurance companies often do not cover or have limited coverage for mainstream CAM treatments. Hispanic CAM as define in this study, are never covered by health insurances.

One group reported significant differences in CAM use such that 70% of Hispanics with insurance used mainstream CAM, and 30% of Hispanics without insurance used mainstream CAM (Graham et al., 2005). Trangmar and Diaz (2008) found similar results and reported that 75% of Hispanics with insurance used mainstream CAM and 65% of Hispanics with and without insurance self-paid for mainstream CAM. In a study of Mexican-American older adults,
Medicaid coverage predicted mainstream CAM use (Loera et al., 2007). Lopez (2005) suggested that those who had emergency health coverage only were less likely to use a folk-healer than those without insurance coverage. Other results suggest that Mexican-American women without health insurance were 1.8 times as likely to use ethnomedical treatment as those with insurance (Iniguez & Palinkas, 2003). Still, one study reported that insurance coverage had no relation to curandero use (Higginbotham et al., 1990).

Even though none of these studies defined the purpose for requesting the information whether participants had or not private or public insurance, it may be inferred that this information was used to measure income or socioeconomic status (SES). In the case of public insurance coverage, it may have been used not only as SES status but also as legal immigration status. Consequently, more research is needed in order to determine confounding variables in the relationship between insurance status and CAM use. Additionally, more data is needed in order to understand whether Hispanics with insurance use CAM, and whether Hispanics covered by insurance companies who pay for mainstream CAM treatments choose to utilize these treatment modalities.

**CAM as a Treatment**

Five studies offered information about why Hispanics and Mexican-Americans use CAM. A study including a small sample of mostly first generation Mexican-American caregivers suggested that participants seek care from curanderos to treat folk illnesses such as mal ojo, empacho, mollera caída, and susto. However, the results suggested that mainstream medicine was viewed as more effective in treating health problems without a folk origin (Risser & Mazur, 1995). Likewise, this same study suggested that curanderos were used to treat headache, empacho, nervios, and susto. It is important to note that all these culturally bound
syndromes share similar symptoms related to diagnosis of mental health illnesses.

Other studies have suggested a multitude of reasons for CAM use such as the treatment of pain, lack of energy, and overweight (Mikhail et al., 2004), often related to mental health conditions. Other reasons for CAM are the treatment of infections, constipation/diarrhea, high blood pressure, and diabetes (Trangmar & Diaz, 2008); or the treatment of cancer and osteoporosis (Kronenberg et al., 2006). The variation in responses indicates that Mexican-Americans likely use CAM to treat a variety of ailments that include both culturally bound illnesses and those commonly treated by doctors or mental health practitioners in the U. S.

**Motivation for CAM use**

The underlying motivation for CAM use is also variable. Family tradition appears to be a predictor, as between 33% and 50% of participants reported using both Hispanic and mainstream CAM because their families taught them to use these remedies (Chao et al., 2006; Trangmar & Diaz, 2008). Additionally, Hispanics in two studies reported using CAM because mainstream medicine was too expensive (Chao et al., 2006; Graham et al., 2005). However, only 10% of participants in another study reported using CAM for financial reasons (Trangmar & Diaz, 2008). Other reasons for Mexican-Americans to use CAM were that it is consistent with their beliefs, and that they want a natural approach to healing (Chao et al., 2006). Lastly, CAM is often used when western medical practices are ineffective. For example, 29% of Hispanics reported using CAM because medical professionals could not diagnose and/or treat their problem (Trangmar & Diaz, 2008), and almost half of a sample of Mexican-American older adults reported that they would consider visiting a *curandero* if a physician could no longer help them with an illness (Applewhite, 1995).
It is important to note that none of the studies reviewed reported health care access factors in their studies: how many available Hispanic CAM and mainstream CAM bilingual culturally sensitive practitioners were available in the areas of studies; location of such practitioners and participants’ awareness of their existence. These could be important factors informing participants decisions to utilize one of the other kind of CAM.

**Discussion**

Overall, the findings of this literature review confirm the hypotheses stated previously. Due to Hispanic’s long history of using folk medicine, it is not surprising that Mexican-Americans use Hispanic-specific CAM at higher rates than those from other ethnic backgrounds. However, it is still unclear whether Mexican-Americans use mainstream CAM to the same extent as those from other ethnic backgrounds. It is likely that a variety of variables influence Mexican-Americans’ use of mainstream CAM. Research has indicated that SES and educational attainment are probably positively related to mainstream CAM use among Hispanics.

Second, the data confirmed the hypothesis that the existing empirical literature is insufficient to draw accurate conclusions about the prevalence and utility of CAM treatment with Mexican-Americans. Unfortunately, inconsistently and inadequately defined samples make it difficult to glean clear trends in the patterns of utilization of CAM treatments for Mexican-Americans as many authors failed to determine the sub-ethnicity of the Hispanic participants. Authors who reported the number of Mexican-American participants in their sample determined sub-ethnicity in varying ways. Thus, it is unclear whether ethnic and demographic differences exist between and among samples of Mexican-Americans.

The lack of a clear definition of Hispanic-specific CAM and mainstream CAM among the studies add to the methodological issues in this body of literature. Some authors inquired
about both mainstream CAM modalities and Hispanic-specific CAM modalities while others examined use of only one type of CAM. Moreover, there is little consensus about the modalities considered to be mainstream CAM or Hispanic-specific CAM. Specifically, herbs may be part of either a folk medical practice or a mainstream CAM treatment; thus it may be difficult to determine if authors were measuring mainstream or Hispanic-specific CAM. Additionally, other modalities, such as prayer, may be common among this population, and thus, results may vary significantly depending on whether or not the modality is defined as CAM.

The third hypothesis was confirmed as there is little empirical research about Mexican-Americans’ use of CAM as a method to improve overall well-being and to treat mental illness. Although a variety of studies were conducted in primary care facilities that address general well-being, none of the studies in this review included samples from mental health clinics. Thus, none of the authors directly addressed the use of CAM among those seeking mental health services. However, the literature provided evidence that Hispanics often use mainstream and Hispanic-specific CAM to jointly treat physical, psychological or spiritual concerns. It appears that CAM is used to treat a variety of physical ailments common in mainstream medical practice such as infections, high blood pressure, cancer and diabetes. However, it is important to note that Hispanic populations frequently reported using CAM to treat symptoms that are commonly associated with the somatic aspects of psychological conditions such as lack of energy and headaches. Furthermore, some Mexican-Americans may use Hispanic-specific CAM treatments to cure culturally bound ailments that include psychological, physical, and spiritual components.

The results of the hypotheses point toward future research. First, authors should provide demographic information including the sub-ethnicities of participants as there may be cultural differences between different Hispanic groups. Second, there is a need for a standardized
conceptualization of CAM that includes clear definitions of Hispanic and other cultures specific to CAM and mainstream CAM. There is also a lack of research on samples from southeastern and northern areas of the U. S. as well as samples recruited from mental health clinics. In terms of demographic indicators, there is a need for authors to determine the underlying predictors of Hispanic and mainstream CAM use as acculturation level, SES, education, and insurance status and usage may overlap.

Clearly, the current research on CAM use among Mexican-Americans is limited, and the issues with this body of literature are not limited to the inconsistent definition of CAM or the poorly defined samples of Mexican-Americans. Rather, this review reflects the limited capacity of empirically-based articles to capture the essence of CAM use among Mexican-Americans. For centuries, Mexican-Americans have been using traditional and folk medicine for healing, and a large body of knowledge exists to explain when and how these treatments are used; however, this literature was not archived in these scientific databases. As the field of clinical psychology becomes increasingly empirically driven, scientists and practitioners run the risk of limiting their scope of knowledge.

As researchers, we must strive to use culturally unbiased methods of investigating CAM use among Hispanics. Although much of our work as researchers is based on creating measures to collect data in a standardized way, this method of research has its limitations. For example, the use of questionnaires to collect data about motivations, beliefs, and practices may yield narrow results and misrepresent culturally bound phenomena. In order to fully understand the possible applications of CAM for mental health treatment in Mexican-Americans, researchers must look beyond the articles commonly found in Pubmed, PsychInfo, or AltHealthWatch. Rather, it is vital that information is gathered in a manner consistent with the cultural context of
the sample of participants. In this way, clinical psychologists may need to reach beyond the empirical literature in our field and examine anthropological and sociological literature as well as qualitative reports about the attitudes surrounding CAM use and the motivations underlying use of CAM among Mexican-Americans.

**Conclusion**

The existing literature provided evidence that Mexican-Americans utilize CAM treatments for physical, psychological and spiritual concerns as well as a treatment for culturally bound syndromes. However, due to methodological issues such as a lack of a uniform definition of CAM and a failure to adequately define the samples of participants, it is difficult to draw clear conclusions about whether ethnicity, acculturation, SES, medical insurance status and coverage, and education predict CAM use among Mexican-Americans. More rigorous and culturally relevant research methods, with well defined Hispanic-specific and mainstream CAM are needed to study the use pattern of CAM by Mexican-Americans. Likewise, the body of literature available through PubMed, PsychInfo, and AltHealthWatch databases is inadequate to address the underlying motivations, uses, and cultural significance for CAM treatments among Hispanics.
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