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Factors Associated with Sleep Disturbance in Women of Mexican Descent

MarySue V. Heilemann, PhD, RN [Associate Professor],

School of Nursing, University of California, Los Angeles, California, USA

Shonali M. Choudhury, PhD, MMH [Research Assistant Professor],

School of Nursing and Health Studies, University of Miami, Florida, USA

Felix Salvador Kury, MS, MFT [Instructor], and

La Raza Studies Department, College of Ethnic Studies, San Francisco State University, California, USA

Kathryn A. Lee, PhD, RN [Professor and James & Marjorie Livingston Endowed Chair]

School of Nursing, University of California, San Francisco, California, USA

Abstract

Aims—The aims were to identify the most useful parameters of acculturation in relation to self reported sleep disturbance and describe risk factors for sleep disturbance in women of Mexican descent.

Background—Little is known about acculturation as a factor for poor sleep in the context of other personal factors such as income or sense of resilience or mastery for Latinas in the United States.

Methods—These personal factors were incorporated into a modification of the Conceptual Framework of Impaired Sleep to guide our secondary analysis of self-reported sleep disturbance. Cross sectional data from a convenience sample of 312 women of Mexican descent of childbearing age (21–40 years) located in an urban California community were collected and previously analyzed in relation to depressive symptoms and post traumatic stress disorder. The General Sleep Disturbance Scale (in English and Spanish) was used to assess sleep disturbance.

Results—Early socialization to the United States during childhood was the most useful acculturation parameter for understanding self reported sleep disturbance in this sample. In a multivariate regression analysis, three factors (higher acculturation, lower income, and higher depressive symptoms) were significant in accounting for 40% of the variance in sleep disturbance.

Conclusion—When low income Latinas of Mexican descent report sleep problems, clinicians should probe for environmental sleep factors associated with low income, such as noise, overcrowding, and exposure to trauma and violence, and refer the woman to psychotherapy and counselling rather than merely prescribe a sleep medication.

Introduction

The worldwide phenomenon of immigration, mixing cultures, and acculturation brings with it various challenges to physical and mental health, including issues related to sleep (Holroyd, Molassiotis, Taylor-Pilliae, 2001; James, Fernandes, Nevara, Harris, & Foster, 2009; Maty, Leung, Lau, & Kim, 2010). Latinos comprise the largest minority group in

United States (US) (US Census, 2010b), and numbers are predicted to nearly triple by 2050 (US Census, 2011). The largest sub-group of Latinos are of Mexican descent (US Census, 2010a). Despite a call to evaluate the health risks and disease burden of Latinos in the US (Sorlie et al., 2010), relatively few studies have specifically targeted the problem of sleep disturbance for this rapidly growing population. Even fewer studies have focused specifically on Latina females despite the fact that women are more likely to complain of sleep problems than men (National Sleep Foundation, 1998). Sleep problems lead to reduced productivity, lower cognitive performance, depression, lower quality of life, higher likelihood of accidents, and higher mortality risk (Stuart & Laraia, 2005). Therefore, research is crucial for nurses to be effective in identifying and managing sleep disturbance among the growing numbers of Latinas in the US.

Background

Sleep problems have been linked with being female and also with being low income (Ohhyon, 1996) or having economic difficulties (Lallukka, Arber, Rahkonen, & Lahelma, 2010). Almost one quarter of all US Latinos live in poverty (Ramirez & de la Cruz, 2002). A few sleep studies done in the US have included Latinas (Baker, Wolfson, & Lee, 2009; Caldwell & Redeker, 2009; Green et al., 2010; Troxel, Buysse, Hall, & Matthews, 2009). However, only one considered poverty specifically among Mexican American women (Hale, Do, et al., 2009) and only one examined the effect of acculturation or immigration on sleep (Hale & Rivero-Fuentes, 2009). Hale and Rivero-Fuentes (2009) sampled 1436 adults from the 1990 National Health Interview Survey data and found that US-born Mexican Americans were more likely to report chronic partial sleep deprivation and short sleep duration than immigrants. Poor sleep may contribute to more health risks and therefore would be considered a negative aspect of acculturation. The *Hispanic health paradox* (Vega & Amaro, 1994; Franzini, Ribble, & Keddie, 2001) refers to the health status of first generation Latinos in the US who, despite lower incomes, insufficient health care access, and fewer education and employment opportunities, often have equal or better health outcomes than US-born Hispanics and non-Hispanic Whites (Gallo, Penedo, Espinosa de los Monteros, & Arguelles, 2009; Morales, Lara, Kington, Valdez, & Escarce, 2002). This paradox raises concern regarding the relationship between sleep problems, immigration, and acculturation for Latinas.

Acculturation is typically defined and measured by items such as birthplace or language. However, in a study on mental health outcomes of over 2000 participants, Breslau et al. (2007b) demonstrated that early socialization to the US was a powerful indicator of health risk. They compared Mexicans in Mexico to Mexicans who immigrated to the US and showed that immigrants who came to the US before age 13, and therefore became socialized to the US as children, had higher risk for anxiety and mood disorders than those who came at later ages. In our own previous analyses with the current sample, women who were exposed to the US before age 18 reported more symptoms of depression (2002) and post traumatic stress disorder (PTSD) and more trauma exposure (2005) compared to immigrant women who did not immigrate until age 18 or older. We included personal factors such as sense of resilience and mastery, which had a significant influence on their mental health (2005; 2002).

A high sense of resilience has been conceptualized as a personal asset indicating adaptability despite stress (Wagnild & Young, 1993). A sense of mastery indicates a sense of control over one's life circumstances (Pearlin & Schooler, 1978) in the context of challenges. For Latinas in the US, challenges may include acculturation, poverty, trauma, or abuse but these factors are rarely combined in research with Latinas. However, results from a multi-ethnic study that included Latinas of Mexican descent showed that a higher percentage of Latinas

reported past physical and sexual abuse compared to White and African American women (Humphreys & Lee, 2009). In order for nurses to identify and intervene in culturally appropriate ways with Latinas who complain about their sleep (Potter & Perry, 2005), these factors need to be evaluated in research.

Therefore, we did a secondary analysis guided by the Conceptual Framework of Impaired Sleep (Lee et al., 2004) to investigate sleep disturbance in relation to various factors among this sample of Latinas in the US. The original framework posits that sleep is deprived by self-imposed sleep restriction and competing needs of family members, while sleep is disrupted by acute or chronic physical or mental health problems, substance use, sleep aid use, or past trauma. We modified the framework to include an additional category of personal factors to account for variables that are neither overtly depriving nor disruptive, but may have an impact on sleep in ways not previously considered in research. These personal factors include acculturation, income, and sense of resilience and mastery (See Figure 1).

The Study

Aims

The first aim of this paper is to describe self-reported sleep disturbance according to three parameters of acculturation (birthplace, language preference, and early socialization to the US) in this sample of urban women of Mexican descent. We hypothesized that women who were more acculturated (US-born, preferred English, or experienced early socialization to the US due to US birth or immigration before age 18) would have more sleep disturbance than women who were Mexico-born, preferred Spanish, or were not exposed to the US until adulthood (age 18 or older). Our second aim was to describe factors associated with sleep disturbance. We hypothesized that personal risk factors (low income, low sense of resilience or mastery, and high acculturation) would have a detrimental effect on sleep even after considering known factors associated with sleep deprivation (pregnancy status; role as mother, worker, or partner; living situation) and known factors associated with sleep disruption (substance or sleep aid use, trauma exposure, or other mental health problems such as symptoms of depression or post-traumatic stress).

Design

The Conceptual Framework of Impaired Sleep guided our analysis of cross-sectional data collected with survey methods from a convenience sample of women of Mexican descent of childbearing age (21-40 years) in an urban Northern California community. The previously reported results pertained to mental health outcomes (depressive symptoms and post-traumatic stress) and were published in 2002 and 2005, respectively. This current secondary analysis utilizes the same sample and focuses on their sleep in relation to personal factors as well as mental health symptoms.

Sample

The sample was recruited from three community clinics and one Spanish/English school where information sheets informed women about the study. Women who could read and write in Spanish or English were eligible to participate. Each participant received \$10.00 cash and a small gift after completing the questionnaire. Of approximately 380 women approached, 55 declined to participate, primarily due to insufficient time in their schedule to complete a questionnaire on that day. A total of 325 women completed the study but ten were later excluded after indicating they were not of Mexican descent. Three other women who worked night shift or variable shifts were excluded from analyses due to known sleep problems associated with shift work (Lee et al., 2004). The sample for this secondary analysis included 312 women.

Data Collection

Questionnaires were translated from English into Spanish by a team of bilingual and bicultural translators; the multi-step translation process is described elsewhere (2002 (2003). Translated instruments included the General Sleep Disturbance Scale (Lee, 1992), Resilience Scale (Wagnild & Young, 1993), Mastery Scale (Pearlin & Schooler, 1978), Trauma History Questionnaire (Green, 1996), Center for Epidemiologic Studies-Depression scale (Radloff, 1977), and the Impact of Event Scale-Revised (Weiss & Marmar, 1997). Acculturation was measured by birthplace (Mexico/US), language preference (Spanish/English) and early socialization in the US before 18 years of age (2002).

Measurements and Instruments

General Sleep Disturbance (GSDS)—The GSDS consists of 21 items related to frequency of problems getting to or staying asleep, daytime sleepiness, and use of substances to help induce sleep. The GSDS was tested on 760 women working various shifts and found to be valid and reliable (Lee, 1992). To minimize recall bias and to be congruent with the timeframe of “past 7 days” used in data collection with other questionnaires with this sample, the GSDS addresses sleep disturbance during the past week using a 0 (no days) to 7 (every day in the past week) rating scale. Scores of three or more indicate a problem with sleep on at least three nights during the past week. In the current study, the GSDS was internally consistent with a Cronbach alpha coefficient of .80 for the Spanish version and .83 for the English version.

Personal Factors

Acculturation: Acculturation was measured in three different ways in this study: by birthplace, language, and early socialization in the US during childhood (2002). For the latter, a woman was assigned to one of two groups based on responses to questions on where she was born and at what age she moved to the US if born in Mexico. The first group did not experience early socialization to the US because they did not immigrate to the US until at or after 18 years of age. The second group experienced early socialization to the US and included US-born women as well as Mexico-born women who immigrated before 18 years of age.

Perceived Resilience: Sense of resilience was conceptualized by Wagnild & Young (1993) as personal competence, self reliance, and perseverance combined with a balanced perspective of life that involves adaptability. In this study, it was assessed with a modified version including 23 items of the original 25-item Resilience Scale. The internal consistency reliability (Cronbach alpha) was .93 for both the English and Spanish version of the 23-item modified scale. This measure is discussed in more detail elsewhere (2002; 2003; 2005).

Perceived Mastery: Pearlin and Schooler (1978) defined a sense of mastery as the degree to which a person feels their life circumstances are under their control; a high sense of mastery is considered a positive personal attribute. To measure level of mastery, a modified version including 5 items of the original 7-item Mastery Scale (Pearlin & Schooler, 1978) was used. With the 5-item version, the internal consistency reliability (Cronbach alpha coefficient) was .82 for the English version and .77 for the Spanish version.

Income: Data on economic levels for each woman were self reported. Women estimated their monthly income and reported this by answering a single question in the study questionnaire.

Risk Factors for Sleep Deprivation—The Conceptual Framework of Impaired Sleep holds that multiple roles and responsibilities may contribute to sleep deprivation (Lee et al., 2004) including role as parent (does/does not have children) and worker (employment status), marital/partner status, and living situation (living alone/with others). Because developmental transitions may disrupt sleep (Lee et al., 2004), childbearing status (pregnant, postpartum or neither) was also assessed as a deprivation factor.

Risk Factors for Sleep Disruption

Substance Use: As noted in the Conceptual Framework of Impaired Sleep (Lee et al., 2004), stimulants and other drugs can disrupt sleep. Therefore, participants were asked about number of caffeinated beverages, cigarettes, amount of street drugs (marijuana, crack, cocaine, etc) and alcohol (wine, beer, liquor or mixed drinks) consumed on an average day in the last week. Use of a sleeping aid (prescribed or over-the-counter “sleeping pill,” or any analgesic to induce sleep) was also considered a sleep disruption factor.

Trauma Exposure: The Trauma History Questionnaire (THQ) is a 24-item self report inventory that assesses past exposure to trauma (accidents, disasters, combat situations, or illness) that caused or threatened serious injury to self or death or murder of a close friend or family member (Green, 1996). Items also include sexual trauma and physical trauma. Although participants reported number of times they experienced each trauma, an overall total of all types of traumas reported by each woman (range 1-24) was calculated. Specific sub-scores were calculated by summing the three sexual trauma items (range 1-3) and the three physical trauma items (range 1-3).

Mental Health: Depressive Symptoms: The Center for Epidemiologic Studies-Depression (CES-D) scale is a 20-item scale designed to measure frequency of depressive symptoms over the past week in the general population (Radloff, 1977). It includes one item on sleep disturbance (“My sleep was restless.”). Validity, reliability, and factor structure are similar across a wide variety of demographic characteristics. The scoring range is 0-60, with higher scores indicating greater symptomatology (Radloff, 1977). In the current study, the Cronbach alpha coefficient was .82 for the Spanish version and .80 for English version.

Mental Health: Post-traumatic stress disorder (PTSD): Symptoms of PTSD were measured with the Impact of Event Scale-Revised (IES-R), a 22-item self-report measure (Weiss and Marmar, 1997) that includes one item related to sleep (“I had trouble staying asleep”). IES-R scores can range from 0 to 88, with a higher score indicating more PTSD symptomatology. Weiss and Marmar (1997) found the three subscales of the IES-R to have high internal consistency.

Ethical Considerations

Approval was obtained from a university Ethics Committee for the study and, since Latinas who were not citizens may be reluctant to participate if a signature is required, written consent was waived by the committee. Thus, verbal consent was obtained and no information about citizenship status was collected.

Data Analysis

Using SPSS version 15, Pearson product moment correlations were first conducted on continuous variables to ascertain which sleep deprivation factors, sleep disruption factors, and personal factors were associated with self-reported sleep impairment. Means and standard deviations (SD) were calculated and t-tests were used to compare GSDS mean scores by birthplace (Mexico or US), language preference (Spanish or English), early

socialization to the US before age 18 (no/yes), parent status, employment (worker) status, partner status, and living situation (alone or with others). ANOVA was used to compare women by childbearing status (pregnant, postpartum, or neither). Non-normally distributed data for trauma history and use of caffeine, tobacco, street drugs, and alcohol were dichotomized (used or not used on an average day in the last week) due to wide variation in responses. A multiple regression analysis was done to identify the relative contribution of sleep deprivation factors, sleep disruption factors, and personal factors that best accounted for overall variance in self-reported sleep disturbance scores. Multicollinearity (correlation coefficient $>.70$) between factors was not evident. All measures were assessed for validity and reliability in this sample of Latinas prior to computation of final scores.

Results

Sample Characteristics

Socio-demographic characteristics of the 312 women in this sample are in Table 1. Only nine women lived alone. The mean (SD) GSDS score was 2.40(1.02). A total of 112 women (36%) reported sleep disturbance three days in the past week (GSDS score ≥ 3).

Risk Factors for Sleep Deprivation

There was no significant difference in sleep disturbance scores when the women were compared by childbearing status (pregnant, postpartum, or neither). However, women who were parents reported more sleep disturbance compared to women with no children (2.45(1.01) days/week vs. 2.10(.93); $t(305) = 1.96$, $p = .05$). Unemployed women reported more sleep disturbance than employed women (2.42(1.02) vs. 2.26(0.98); $t(305) = 2.25$, $p = .025$), as did unpartnered women compared to women in permanent relationships (2.80(1.01) vs. 2.45(1.06); $t(298) = 2.35$, $p = .02$). There was no difference in GSDS scores based on living situation (alone or with other people).

Risk Factors for Sleep Disruption

Most of the sample (75%; $n=231$) reported caffeine intake while only 51 (17%) smoked cigarettes, 11(4%) reported street drug use, and 35 (11%) reported consuming alcohol during the past week. There was no association between GSDS score and smoking or caffeine intake. Women who used street drugs reported more sleep disturbance than women who did not (3.04(.77) vs. 2.34(1.01) days/week; $t(308) = 2.16$, $p = .03$). Women who said they consumed alcohol on an average day in the last week had more sleep disturbance scores than women who did not, but this finding did not reach statistical significance ($t(308) = 1.83$, $p = .069$). A total of 68 women (22%) reported using a sleep aid at least once in the last week and some used multiple types of sleep aids; of these, 61 (90%) reported that they used an over-the-counter sleeping pill, 57 (84%) used a prescription sleeping pill, and 54 (79%) used an analgesic one or more times in the last week to induce sleep.

In this sample, 237 (76%) women reported experiencing at least one traumatic event. A total of 81 (26%) reported exposure to sexual trauma and 71 (23%) reported physical trauma (beaten or attacked with or without a weapon). There was no significant difference in sleep disturbance for women who did/did not report any past traumatic event. However, sleep disturbance scores were correlated with number of physical traumas experienced ($r = .23$, $p < .001$). Women reporting past physical trauma had higher sleep disturbance scores than women not exposed to physical trauma (2.77(1.11) vs. 2.29(0.96) days/week; $t(306) = 3.578$, $p < .001$). There was no correlation between sleep disturbance score and number of sexual traumas experienced.

Mental Health: Symptoms of Depression and PTSD

Sleep disturbance was significantly correlated with depressive symptoms ($r = .58$, $p < .001$) and with PTSD ($r = .38$, $p < .001$). As noted above, both the CES-D (frequency of depressive symptoms) and the IES-R (symptoms of PTSD) include an item related to disturbed sleep.

Personal Factors

Sleep disturbance did not differ by acculturation when estimated by country of birth but women who preferred to speak English reported significantly more sleep impairment than women who preferred Spanish (2.52(1.00) vs. 2.25(1.00) days/week; $t(309) = 2.4$, $p = .016$). Women who experienced early socialization to the US reported more sleep disturbance than women who immigrated as adults (2.51(1.02) vs. 2.12(0.94) days/week; $t(309) = 3.10$; $p = .002$). Most of those who used sleep aids ($n = 59$; 87%) experienced early socialization to the US.

There was no association between early socialization to the US and physical trauma. There was a significant inverse correlation between sleep disturbance and income ($r = -.22$, $p < .001$), sense of resilience ($r = -.28$, $p < .001$) and mastery ($r = -.24$, $p < .001$) such that the lower the income or sense of resilience and mastery, the higher their self-report sleep disturbance score.

Multiple Regression Analysis

In a four-step regression analysis, twelve risk factors accounted for 40% of the variance in self-reported sleep disturbance assessed with the GSDS ($F = 15.18$ [12,266], $p < .001$) (Table 2). All twelve factors were also entered simultaneously in a separate analysis yielding similar individual beta coefficients. In Step 1, four sleep-depriving factors (pregnancy or postpartum, and roles as mother, worker and partner) accounted for only 6% of the variance in GSDS scores. In Step 2, two additional sleep-disrupting factors (physical trauma and street drug use) explained an additional 4% of the variance. Then, after controlling for these known risk factors, personal factors (early socialization in the US, income, sense of resilience and mastery) were added as Step 3 and all four factors were significant in accounting for an additional 15% of the variance in GSDS scores.

When mental health factors (depressive symptoms and PTSD) were added to the model as Step 4, an additional 15% of the variance in GSDS scores was explained, however only depressive symptoms made a significant contribution in this step. After all twelve variables were in the final model, only income, exposure to US in childhood, and depressive symptoms made significant contributions to the variance in sleep disturbance scores.

Discussion

Caution is needed when interpreting our results because all measures relied on self-report for sleep disturbance and symptoms of depression and PTSD, rather than clinical interviews. In addition, results are not representative of Latinas over age 40 or under age 21, or those with incomes above poverty level. Our sample is not representative of Latinas who are descendent from countries other than Mexico or who are living in countries other than the US. Therefore, broad generalizations cannot be made based on these results.

Guided by the Conceptual Framework of Impaired Sleep (Lee et al., 2004), our study with US women of Mexican descent moves beyond comparing women across traditionally defined ethnic groups to bring a more refined focus on within-group differences. Although our cross-sectional design limits insight into the lives of our participants, the multiple regression analysis of twelve salient factors accounted for 40% of the variance in sleep

disturbance scores in this sample of women. However, it was personal factors combined with higher frequency of depressive symptoms that were significant indicators of poor sleep after controlling for all other potential sleep-associated factors discussed in the literature. Results indicate that a woman's role as mother or worker is not related to poor sleep. Rather, the extent of her acculturation, level of income, and exposure to physical trauma play a larger role. However, exposure to trauma was overshadowed by depressive symptoms in this cross-sectional analysis. Sleep disturbance and depressive symptoms were both asked in relation to the past week. It is not clear if time since the trauma exposure would have more influence in a model of current perception of sleep disturbance. The effect of self perceptions related to adaptability (resilience) and control (mastery) on self reported sleep disturbance was eclipsed by depressive symptoms in this cross sectional analysis. Our previous work showed no collinearity between depressive symptoms and sense of resilience or mastery with this sample. It appears that women's self report of depressive symptoms holds more explanatory power than these personal factors in terms of perceived sleep problems with this sample.

Previously, we reported that Latinas of Mexican descent in this sample who were exposed to the US in childhood reported more depressive symptoms (2002) and PTSD symptoms (2005) than those who did not immigrate until they were 18 years of age or older. This is similar to the findings of Breslau and colleagues (2007a) who studied 5,000 US-born and foreign-born Blacks, Whites, and Latinos in the US and found that immigrants socialized to the US in childhood had a higher risk of mood disorders similar to US-born individuals; a significantly higher level than immigrants who came to the US in adulthood. In other research, poor sleep has been associated with mental health problems such as depression and PTSD (Krakow et al., 2001; Woods, Kozachik, & Hall, 2010). However, clarity is lacking on whether sleep disturbance is a symptom of mental health problems like PTSD or Major Depression (American Psychiatric Association, 2000), an independent mental health problem itself (Bellevill, Guay, & Marchand, 2009), or a predictor of mental health outcomes (Koren, Arnon, Lavie, & Klein, 2002). As mentioned, both CES-D and IES-R measures include sleep disturbance items. While mental health was not the outcome of interest in the current analysis, research with a sample of 5,469 young adults that included Mexican Americans sampled between 1988 and 1994 as part of the NHANES survey indicated a relationship between insomnia and mental health problems, yet authors were unable to identify the causative factor because of the cross-sectional design of their study (Hale, Do, et al., 2009). Because major depression and PTSD are chronic long-term mental health problems and both include aspects of sleep disturbance, future research on this topic would benefit from a longitudinal design. With Latino populations, research is needed that takes into account clinical assessments of mental health over time in relation to acculturation and exposure to trauma and violence, including time points before and after immigration.

Two other studies (Hale & Rivera-Fuentes, 2009; Green et al., 2010) linked acculturation with sleep problems among Latino adults, but no other sleep studies have included acculturation or personal attributes such as low sense of resilience or mastery in relation to poverty, immigration, or exposure to trauma. Thus, our ability to interpret these results is limited. Nonetheless, these findings uphold our hypothesis that Latinas with personal factors such as high acculturation are more vulnerable to sleep problems.

In addition, income remained a strong predictor of poor sleep in our sample after controlling for acculturation and all other factors. During an assessment of factors that influence sleep, nurses need to be aware of the unique contextual challenges that threaten sleep (Potter & Perry, 2005). For example, when caring for Latinas coping with low income, nurses should pay special attention to ways in which environments associated with sleep may not be conducive to a good night's sleep. How income may be a proxy measure of street traffic, the

threat of violence, crowded living conditions, or insufficient nutrition and hunger should be addressed. Referrals to social service agencies may be required.

Our hypothesis that more acculturated women would report more sleep disturbance was upheld when acculturation was measured with early socialization to the US or language but not birthplace. The acculturation hypothesis holds that socio-cultural values protect first-generation Latino immigrants, but as each generation adopts a US lifestyle, personal factors arise that impact health (Morales et al., 2002).

Although more than a third of our sample (36%) reported sleep problems three or more nights in the last week (GSDS scores ≥ 3), our findings were not explained by expected risk factors such as mother's role during the postpartum period, smoking, alcohol, or caffeine use. However, women who were parents and women without a permanent partner had higher sleep disturbance scores. Similarly, Ohayon (1996) and Nakao et al. (2001) found that being female and unmarried was associated with sleep problems in other samples. Likewise, our data suggest that *lack* of a partner, contributes to perception of sleep disturbance. The relational demands or actual "work" of being a partner may be less important to sleep than the actual benefits of having a partner in a socio-cultural or physical sense. It is not clear if the presence of another adult in the house provides a sense of security that influences sleep or simply adds to the family resources and income.

Sleep problems have been related to past trauma exposure for persons with or without a PTSD diagnosis (Belleville, Guay, & Marchand, 2009; Rhudy et al., 2008). Physical but not sexual trauma was related to sleep disturbance in our sample, upholding our hypothesis regarding sleep disruption factors, but only in terms of physical abuse. In a study with 157 women experiencing intimate partner violence in the US, Woods and colleagues (2010) found that past history of childhood maltreatment was related to sleep quality and disruptive night-time behaviours in adult women. In an overview of sleep and trauma, Caldwell and Redeker (2005) pointed out the influence of physical trauma, noting that Glod and colleagues (1997) found that physical, but not sexual, abuse was related to sleep disturbance in their sample of abused children in the US. It is noteworthy that Humphreys & Lee (2009) reported that a higher percentage of Latinas reported physical and sexual abuse, including childhood abuse, compared to White and African American women.

While trauma exposure may be part of a woman's health history, Latinas may feel more comfortable voicing a complaint about sleep rather than physical trauma or abuse. Therefore, any complaints about sleep problems should be pursued through a careful nursing assessment that includes past or current history of physical trauma. After taking a detailed history related to sleep complaints, the nurse may identify the need for more data. These data could be obtained by keeping a two-week sleep diary, conducting a medical or psychiatric exam, or psychological testing. Results from these data may indicate that referral is warranted (Stuart & Laraia, 2005).

If physical trauma is an issue, a prescription for a sleep medication to treat her chief complaint will not be as effective in the long-term as culturally appropriate counselling or cognitive behavioural therapy (CBT). Group CBT was effective for patients using hypnotics for insomnia when treatment was combined with relaxation, sleep hygiene information, behavioural techniques to improve sleep habits, and sleep education on challenging distorted beliefs about sleep (Zavesicka, Brunovsky, Matousek, & Sos, 2008). It is crucial for nurses to identify sleep problems and begin the process of resolving problems among their patients with a history of trauma exposure. After their sleep problem begins to improve, patients are often more able to engage in trauma therapy (Galovski, Monson, Bruch, & Resick, 2009).

Conclusion

Our modification of the Conceptual Framework of Impaired Sleep (Lee et al., 2004) allowed for an innovative approach to the analysis of sleep disturbance among Latinas, taking into account known risk factors revealed by past sleep research but also unique, personal attributes not previously included yet salient to immigrant populations. Specifically, the modified model allowed for the addition of acculturation and sense of resilience (adaptability) or sense of mastery (control). Inclusion of these personal factors brings insight about contributory factors that have been overlooked in the past. Overall, the model was useful to organize both traditional and innovative variables for this study and productive in developing new knowledge.

This cross-sectional analysis, however, does not clarify which factors are more influential in Latinas' lives at particular points in time. That is, data collected at one time point does not address whether early socialization to the US sets up the context within which women with lower income lack a sense of mastery or resilience, or experience symptoms associated with depression and PTSD, and thus perceive more sleep problems, or whether other scenarios predominate. While the modified model can be beneficial to future research, results from this secondary analysis would suggest that carefully planned longitudinal designs are needed to gain clarity about the dynamic of protective personal attributes (income and acculturation) and risk factors in relation to sleep problems (depressive symptoms) and how early socialization to the US influences healthy and unhealthy sleep behaviours. Thus, future research should focus on why, how, and at what age socialization to the US becomes a critical risk factor for sleep problems. Insight into how these personal and mental health factors are related and how they influence sleep can be gained through research with multiple data collection points over time that involve more objective clinical assessments.

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References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders DSM-IV-TR. Fourth. Washington D.C; USA: 2000.
- Baker FC, Wolfson AR, Lee KA. Association of sociodemographic, lifestyle, and health factors with sleep quality and daytime sleepiness in women: findings from the 2007 National Sleep Foundation "Sleep in America Poll". *Journal of Women's Health*. 2009; 18(6):841–9.
- Belleville G, Guay S, Marchand A. Impact of sleep disturbances on PTSD symptoms and perceived health. *Journal of Nervous and Mental Disease*. 2009; 197(2):126–132. [PubMed: 19214048]
- Breslau J, Aguilar-Gaxiola S, Borges G, Kendler KS, Su M, Kessler RC. Risk for psychiatric disorder among immigrants and their US-born descendants: Evidence from the National Comorbidity Survey-Replication. *Journal of Nervous and Mental Disease*. 2007a; 195(3):189–195. [PubMed: 17468677]
- Breslau J, Aguilar-Gaxiola S, Borges G, Castilla-Puentes RC, Kendler KS, Medina-Mora ME, Su M, Kessler RC. Mental disorders among English-speaking Mexican immigrants to the US compared to a national sample of Mexicans. *Psychiatry Research*. 2007b; 151(1-2):115–122. [PubMed: 17363072]
- Caldwell BA, Redeker N. Sleep and trauma: An overview. *Issues in Mental Health Nursing*. 2005; 26:721–738. [PubMed: 16126648]
- Caldwell BA, Redeker N. Sleep patterns and psychological distress in women living in an inner city. *Research in Nursing and Health*. 2009; 32:177–190. [PubMed: 19086035]

- Creamer M, Bell R, Failla S. Psychometric properties of the Impact of Event Scale-Revised. *Behavioral Research and Therapy*. 2003; 41:1489–1496.
- Franzini L, Ribble JC, Keddie AM. Understanding the Hispanic Health Paradox. *Ethnicity and Disease*. 2001; 11(3):496–518. [PubMed: 11572416]
- Gallo LC, Penedo FJ, Espinosa de los Monteros K, Arguelles W. Resiliency in the face of disadvantage: Do Hispanic cultural characteristics protect health outcomes? *Journal of Personality*. 2009; 77(6):1707–46. [PubMed: 19796063]
- Galovski TE, Monson C, Bruch SE, Rsesick PA. Does cognitive-behavioral therapy for PTSD improve perceived health and sleep impairment? *Journal of Traumatic Stress*. 2009; 22(3):197–204. [PubMed: 19466746]
- Glod CA, Teicher MH, Hartman CR, Harakai T. Increased nocturnal activity and impaired sleep maintenance in abused children. *Journal of American Academy of Child and Adolescent Psychiatry*. 1997; 36(9):1236–1243.
- Green, BL. Psychometric review of the Trauma History Questionnaire (THQ). In: Stamm, BH., editor. *Measurement of Stress, Trauma, and Adaptation*. Sidran Press; Lutherville: 1996. p. 366-369.
- Green R, Santoro NF, McGinn AP, Wildman RP, Derby CA, Polotsky AJ, Weiss G. The relationship between psychosocial status, acculturation and country of origin in mid-life Hispanic women: Data from the study of women's health across the nation (SWAN). *Climacteric*. 2010; 13:534–543. [PubMed: 20210631]
- Hale L, Do DP, Basurto-Davila R, Heron M, Finch BK, Dubowitz, Lurie N, Bird CE. Does mental health history explain gender disparities in insomnia symptoms among young adults? *Sleep Medicine*. 2009; 10(10):1118–23. [PubMed: 19467926]
- Hale L, Rivero-Fuentes E. Negative Acculturation in Sleep Duration Among Mexican Immigrants and Mexican Americans. *Journal of Immigration and Minority Health*. 2009 Advance online publication. 10.1007/s10903-009-9284-1
- Holroyd EA, Molassiotis R, Taylor-Pilliae RE. Filipino domestic workers in Hong Kong: health related behaviors, health locus of control and social support. *Women's Health*. 2001; 33(1-2):181–205.
- Humphreys J, Lee KA. Interpersonal violence is associated with depression and chronic physical health problems in midlife women. *Issues Mental Health Nursing*. 2009; 30(4):206–13. [PubMed: 19363725]
- James S, Fernandes M, Nevara GS, Harris S, Foster D. Problemas de nervos: A multivocal symbol of distress for Portuguese immigrants. *Transcultural Psychiatry*. 2009; 45(2):285–99. [PubMed: 19541751]
- Koren D, Arnon I, Lavie P, Klein E. Sleep complaints as early predictors of posttraumatic stress disorder: A 1-year prospective study of injured survivors of motor vehicle accidents. *American Journal of Psychiatry*. 2002; 159(5):855–857. [PubMed: 11986142]
- Krakow B, Germain A, Warner TD, Scharader R, Koss M, Hollifield M, Tandberg D, Melendrez D, Johnston L. The relationship of sleep quality and posttraumatic stress to potential sleep disorders in sexual assault survivors with nightmares, insomnia, and PTSD. *Journal of Traumatic Stress*. 2001; 14(4):647–65. [PubMed: 11776415]
- Lee KA. Self-reported sleep disturbances in employed women. *Sleep*. 1992; 15:493–498. [PubMed: 1475563]
- Lee KA, Landis C, Chasens ER, Dowling G, Merritt S, Parker KP, et al. Sleep and chronobiology: recommendations for nursing education. *Nursing Outlook*. 2004; 52(3):126–133. [PubMed: 15197361]
- Maty SC, Leung H, Lau C, Kim G. Factors that influence self-reported general health status among different Asian ethnic groups: Evidence from the roadmap to the new horizon: Linking Asians to improved health and wellness study. *Journal of Immigrant and Minority Health*. 2010 Advance online publication. 10.1007/s10903-010-9349-1
- Morales LS, Lara M, Kington RS, Valdez RO, Escarce JJ. Socioeconomic, cultural, and behavioral factors affecting Hispanic health outcomes. *Health Care Poor Underserved*. 2002; 13(4):477–503.

- Nakao M, Fricchione G, Zuttermeister PC, Myers P, Barsky AJ, Benson H. Effects of gender and marital status on somatic symptoms of patients attending a mind/body medicine clinic. *Behavioral Medicine*. 2001; 26:159–168. [PubMed: 11409218]
- National Sleep Foundation. Toward optimal health: The experts respond to sleep deprivation. *Journal of Women's Health*. 1998; 7:1205–1210.
- Ohayon MM. Epidemiological study on insomnia in the general population. *Sleep*. 1996; 18:S7–15. [PubMed: 8723370]
- Ortega AN, Rosenheck R, Alegria M, Desai RA. Acculturation and the lifetime risk of psychiatric and substance use disorders among Hispanics. *Journal of Nervous and Mental Disease*. 2000; 188(11): 728–735. [PubMed: 11093374]
- Pearlin LI, Schooler C. The structure of coping. *Journal of Health Social Behavior*. 1978; 19(1):2–21. [PubMed: 649936]
- Potter, PA.; Perry, AG. *Fundamentals of Nursing*. 6th. St. Louis, Missouri: Elsevier- Mosby; 2005. Sleep; p. 1199-1227.
- Radloff L. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.
- Ramirez, RR.; de la Cruz, P. *Current Population Reports*. Washington, D.C: US Census Bureau; 2002. The Hispanic population in the United States: March 2002; p. P20-545.
- Rhudy JL, Davis JL, Williams AE, McCabe KM, Byrd PM. Physiological-emotional reactivity to nightmare-related imagery in trauma-exposed persons with chronic nightmares. *Behavioral Sleep Medicine*. 2008; 6:158–177. [PubMed: 18629687]
- Sorlie PD, Avilés-Santa LM, Wassertheil-Smoller S, Kaplan RC, Daviglus ML, Giachello AL, Schneiderman N, Raij L, Talavera G, Allison M, Lavange L, Chambless LE, Heiss G. Design and implementation of the Hispanic Community Health Study/Study of Latinos. *Annals of Epidemiology*. 2010; 20(8):629–41. [PubMed: 20609343]
- Stuart, GW.; Laraia, MT. *Principles and Practice of Psychiatric Nursing*. 8th. St. Louis, Missouri: Elsevier-Mosby; 2005. Psychophysiological responses and somatoform and sleep disorders; p. 285-302.
- Troxel WM, Buysse DJ, Hall M, Matthews KA. Marital happiness and sleep disturbances in a multi-ethnic sample of middle-aged women. *Behavioral Sleep Medicine*. 2009; 7(1):2–19. [PubMed: 19116797]
- United States Census Bureau. Race and Hispanic origin of the foreign-born population in the United States: 2007. *American Community Survey Reports*, ACS-11. 2010a. Retrieved from <http://www.census.gov/prod/2010pubs/acs-11.pdf> on 5 May 2011
- United States Census Bureau. USA Quick Facts. 2010b. Retrieved from <http://quickfacts.census.gov/qfd/states/00000.html> on 8 January 2011
- United States Census Bureau. An older and more diverse nation by mid-century. Newsroom. CB08-123. 2011. Retrieved from <http://www.census.gov/newsroom/releases/archives/population/cb08-123.html> on 3 May 2011
- Vega WA, Amaro H. Latino outlook: Good health, uncertain prognosis. *Annual Review of Public Health*. 1994; 15:39–67. [PubMed: 8054092]
- Wagnild GM, Young HM. Development and psychometric evaluation of the Resilience Scale. *Journal of Nursing Measurement*. 1993; 1(2):165–178. [PubMed: 7850498]
- Weiss, DS.; Marmar, CR. The impact of event scale-revised. In: Wilson, JP.; Keane, TM., editors. *Assessing Psychological Trauma and PTSD*. New York: Guilford Press; 1997. p. 399-411.
- Woods SJ, Kozachik SL, Hall RJ. Subjective sleep quality in women experiencing intimate partner violence: Contributions of situational, psychological, and physiological factors. *Journal of Traumatic Stress*. 2010; 23(1):141–150. [PubMed: 20143342]
- Zavesicka L, Brunovsky M, Matousek M, Sos P. Discontinuation of hypnotics during cognitive behavioral therapy for insomnia. *BMC Psychiatry*. 2008; 10:1186/1471-244X-8-80

Summary Statement

What is already known about this topic

- Women are more likely to complain of sleep problems than men, but very little previous research has focused on the effect of immigration, acculturation or past abuse on sleep for Latinas.
- No previous research has included the influence of personal factors such as sense of resilience or mastery on sleep among women of Mexican descent, immigrant or native born.

What this paper adds

- By focusing on acculturation, results revealed that sleep disturbance was more commonly reported by the subgroup of low income Latinas of Mexican descent who were socialized to the United States in childhood and by those who preferred English.
- Latinas at highest risk of poor sleep also had past physical trauma, higher acculturation, lower income, lower self-perception of resilience and mastery, and higher frequency of depressive symptoms.

Implications for practice and/or policy

- Because physical trauma exposure was related to sleep disturbance in this sample of women of Mexican descent, clinicians should assess trauma history when patients complain of sleep disturbance.
- Rather than just prescribe a sleep medication for short-term use, clinicians may need to refer for cognitive behavioural therapy or other counselling to improve both mental health and sleep.
- Understanding the unique experiences of Latina subgroups requires special attention to factors such as acculturation or the environmental challenges that come with poverty.

Figure 1.
Modified Conceptual Framework of Impaired Sleep (based on Lee et al, 2004).

Table 1
Socio-demographic Characteristics

Age (n=311)	
Years (mean $\pm$ SD)	28 $\pm$ 5.6
Range	21 - 40
Birthplace (n=312)	
Mexico	166 (53%)
US	146 (47%)
Language Preference (n=312)	
Spanish	145 (46%)
English	167 (53%)
Exposure to US in childhood (age 18) (n=298)	
No	96 (32%)
Yes	202 (68%)
Partner Status (n=301)	
Married/partnered	237 (78%)
Single/never married	29 (10%)
Separated/divorced/ widow	32 (12%)
Childbearing Status (n=312)	
Currently Pregnant	59 (19%)
> 6 months postpartum	70 (22%)
Neither	183 (59%)
Parent Status (n=307)	
Yes	266 (86%)
No	41 (14%)
Education (highest completed) (n= 309)	
No formal education	8 (2.5%)
Some high school	113 (37%)
High school diploma	99 (32%)
Some college	75 (24%)
Bachelor's degree or more	14 (4.5%)
Monthly household income (n=306)	
< \$1,250	170 (55%)
\$1,251 – 2,080	82 (27%)
\$2,081 – 2,900	28 (9%)
\$2,901	26 (8%)
Employment (n=304)	
Outside the home	139(46%)

Table 2

Four-step Regression Model with 12 factors that best account for the variance in self-reported sleep disturbance (total GSDS score) among women of Mexican descent (N=279).

	Step I Beta (t)	Step II Beta (t)	Step III Beta (t)	Step IV Beta (t)
Sleep Deprivation Factors				
Partner Status	.173 (2.9) **	.136 (2.31) *	.058 (1.05)	.016 (.32)
Role as Parent	.125 (2.1) *	.114 (1.96)	.056 (1.04)	.0307 (.763)
Role as Employer Worker	-.108 (-1.8)	-.101 (-1.70)	-.041 (-.706)	-.029 (-.54)
Developmental adaptation to Pregnancy & Postpartum	.096 (1.6)	.093 (1.59)	.099 (1.80)	.092 (1.88)
Sleep Disruption Factors				
Physical Trauma Exposure		.185 (3.14) **	.157 (2.88) **	.034 (.673)
Street Drug Use		.087 (1.50)	.057 (1.05)	.022 (.455)
Personal Factors				
Early Socialization to US as child			-.224 (3.98) ***	-.151 (-2.92) **
Income			-.182 (-3.13) **	-.162 (-3.11) **
Level of Resilience			-.218 (-4.06) ***	-.079 (-1.56)
Level of Mastery			-.166 (-3.05) **	-.015 (2.87)
Mental Health Factors				
Depressive Symptoms				.454 (6.96) ***
PTSD				.085 (1.50)
R ²	.063 ***	.108 ***	.251 ***	.406 *** F _[12, 266] = 15.18

Note:

* p<.05;

** p .01;

*** p .001