Published in final edited form as:
Soc Sci Med. 2011 January ; 72(2): 256–264. doi:10.1016/j.socscimed.2010.11.010.

"So We Adapt Step by Step": Acculturation Experiences Affecting Diabetes Management and Perceived Health for Chinese American Immigrants

Kevin M. Chun,
University of San Francisco

Catherine A. Chesla, and
University of California, San Francisco

Christine M.L. Kwan
University of California, San Francisco

Abstract

This study examines how acculturation affects type 2 diabetes management and perceived health for Chinese American immigrants in the U.S. Acculturation experiences or cultural adaptation experiences affecting diabetes management and health were solicited from an informant group of immigrant patients and their spouses (N=40) during group, couple and individual interviews conducted in 2005 to 2008. A separate respondent group of immigrant patients and their spouses (N=19) meeting inclusion criteria reviewed and confirmed themes generated by the informant group. Using interpretive phenomenology, three key themes in patients' and spouses' acculturation experiences were identified: a) utilizing health care, b) maintaining family relations and roles, and c) establishing community ties and groundedness in the U.S. Acculturation experiences reflecting these themes were broad in scope and not fully captured by current self-report and proxy acculturation measures. In the current study, shifting family roles and evaluations of diabetes care and physical environment in the U.S. significantly affected diabetes management and health, yet are overlooked in acculturation and health investigations. Furthermore, the salience and impact of specific acculturation experiences respective to diabetes management and perceived health varied across participants due to individual, family, developmental, and environmental factors. In regards to salience, maintaining filial and interdependent family relations in the U.S. was of particular concern for older participants and coping with inadequate health insurance in the U.S. was especially distressing for self-described lower-middle to middle-class participants. In terms of impact, family separation and relocating to ethnically similar neighborhoods in the U.S. differentially affected diabetes management and health due to participants' varied family relations and pre-migration family support levels and diverse cultural and linguistic backgrounds, respectively. Implications for expanding current conceptualizations and measures of acculturation to better comprehend its dynamic and multidimensional properties and complex effects on health are discussed. Additionally, implications for developing culturally-appropriate diabetes management recommendations for Chinese immigrants and their families are outlined.

Contact information: Dr. Kevin M. Chun, University of San Francisco, Department of Psychology, 2130 Fulton Street, San Francisco, CA 94117-1080, chunk@usfca.edu, Tel: 415.422.2418, Fax: 415.422.2517.

Keywords

acculturation; diabetes management; Chinese American immigrant health; USA

Although prevalence rates of type 2 diabetes among Chinese Americans are two times higher than for the general population (McNeely & Boyko, 2004), research on diabetes management issues for this ethnic group is surprisingly limited. The few studies on this topic found that Chinese American immigrants encounter distinct cultural and family issues that potentially complicate their diabetes management and overall health (Chesla & Chun, 2005; Chesla, Chun, & Kwan, 2009; Chun & Chesla, 2004; Fisher et al., 2004; Jayne & Rankin, 2001). Acculturation issues in managing this disease however have not been thoroughly explored for this ethnic group. Although definitions of acculturation vary across studies, fundamentally it is a process of adjustment and adaptation to a new culture involving varying instances of cultural learning, maintenance, and synthesis (Chun & Akutsu, 2009; Marin, Balls Organista, & Chun, 2003). Given that over 70% of Chinese Americans are first-generation immigrants (Shinagawa & Kim, 2008), acculturation effects on diabetes management is a pertinent issue for exploration.

To date, only one study (Fisher et al., 2004) directly examined the relationship of acculturation to diabetes management for Chinese American immigrants. Using the Suinn-Lew-Asian Self Identity Acculturation Scale (Suinn, Ahuna, & Khoo, 1992), results showed that highly-acculturated immigrants reported less negative effects of diabetes on their quality of life and better general health than their less-acculturated peers. However, specific acculturation experiences underlying these observed relationships were not explored.

Other studies have identified compelling linkages between acculturation and other diabetes-related outcomes for Asian Americans. For instance, investigations using proxy acculturation measures (e.g., years of U.S. residency, generational status, birthplace) have reported elevated type 2 diabetes risk with increased acculturation (Hosler & Melnik, 2003; Huang et al., 1996). Implicated in this relationship are higher obesity rates (Candib, 2007; Gomez, Kelsey, Glaser, Lee, & Sidney, 2004) and related lifestyle changes (i.e., higher caloric intake, adoption of unhealthy U.S. diet and food preferences, less physical activity) presumably resulting from increased exposure to American culture (Abate & Chandalia, 2003; Lu & Cason, 2004; Unger et al., 2004). Studies using proxy acculturation measures also show that acculturation affects health care experiences relevant to diabetes management. Specifically, less acculturated Asian Americans underutilize health care (Salant & Lauderdale, 2003) and report more communication difficulties with health care providers than their more acculturated peers (Green et al., 2005; Ngo-Metzger et al., 2003).

Still, findings on acculturation and these diabetes-related outcomes for Chinese immigrants are sometimes mixed and difficult to interpret. For instance, in regard to type 2 diabetes risk, a study of Chinese Americans did not find a significant relationship between acculturation scale scores and disease rates (Kandula et al., 2008). Also, length of North American residency was unrelated to body weight for Chinese immigrants (McDonald & Kennedy, 2005). In terms of health behaviors, Chinese women with extended North American residency consumed more fruits and vegetables, but were also more likely to adopt a high-fat Western diet than their more recently immigrated peers (Satia et al., 2001). Regarding health care experiences, duration of U.S. residency was unrelated to health care utilization for a Chinese American immigrant sample (Miltiades & Wu, 2008).

In sum, the relationship between acculturation and diabetes management among Chinese immigrants is not fully understood due to a lack of studies on this topic and mixed findings

on acculturation and diabetes-related outcomes. Mixed findings largely stem from an overreliance on proxy and self-report acculturation measures that do not fully capture this construct's multidimensional and dynamic properties and complex relationship to health (Chun, Morera, Andal, & Skewes, 2007; Myers & Rodriguez, 2003; Perez-Escamilla & Putnik, 2007; Salant & Lauderdale, 2003). Acculturation is multidimensional because it encompasses multiple domains of behavioral, cognitive and emotional adaptive functioning (Chun, Balls Organista, & Marin, 2003). Acculturation is a dynamic process because demands or pressures to adapt, such as pressures to speak English or endorse new cultural norms, can fluctuate across different social and cultural contexts or situations (Trimble, 2003). Different individual and family goals and motives for cultural adaptation add to the dynamic qualities of acculturation (Chun & Akutsu, 2009). Multiple acculturation experiences, including variable levels of "acculturative stress" or stress from cultural adaptation demands (Chun, Balls Organista, & Marin, 2003), can thus emerge for different immigrants, plausibly affecting their diabetes management and health in complex ways. In this context, proxy acculturation measures are imprecise because they do not directly assess the nature of individual cultural adaptation experiences (Chun, Balls Organista, & Marin, 2003). Self-report measures can also be problematic because the acculturation domains assessed may be insufficient and their salience or importance to individuals' acculturation experiences may vary (Chun, 2006). In this latter regard, composite scale scores may obscure differential effects of acculturation domains on specified outcomes (Abe-Kim, Okazaki, & Goto, 2001; Ying, 1993), including for diabetes management and health outcomes (Salant & Lauderdale, 2003). Lastly, both proxy and self-report acculturation measures do not directly evaluate the context in which acculturation unfolds, thus important family, cultural and sociopolitical contexts shaping cultural adaptation and health are overlooked. Consequently, fundamental questions concerning the nature of acculturation and its relationship to diabetes management and health – namely, how do Chinese immigrants actually experience acculturation, and how do these experiences complicate or support their diabetes management and health? – largely remain a matter of conjecture.

A primary goal of this study was to articulate the complex ways in which acculturation affects diabetes management and perceived health for first-generation Chinese immigrants in the U.S. Special attention was given to identifying key acculturation experiences, including instances of stressful or successful cultural adaptation, which respectively complicated or facilitated their diabetes management. Qualitative research methods were utilized to comprehend the multidimensional and dynamic properties of acculturation based on immigrant participants' extended narratives of their cultural adaptation experiences. Qualitative methods also allowed for findings and interpretations that were culturally-anchored in immigrant participants' daily diabetes management and health practices.

Method

This interpretive comparative interview study was conducted in 2005 to 2008 with an informant group of 20 foreign-born Chinese American couples in which at least one member was diagnosed with type 2 diabetes. All informants spoke Cantonese, resided in the U.S for an average of 14.7 years (SD=13.6) and came from mainland China (55%) or Hong Kong (45%). On average, they were 62-years old (SD=9.2), reported 11.7 years of formal education (SD=5.3), and had been married for 34 years (SD=13.7). Forty-three percent of informants were employed and 55% had average household incomes of $20,000 or less. Patient informants were 40% male and had been diagnosed for an average of 8.4 years (SD=5.9). To treat their diabetes, 1 patient informant used diet and exercise only, 17 used oral medications, and 2 used insulin. Their mean hemoglobin A1c was 6.93 (SD=0.96), indicating relatively good diabetes management.

Inclusion criteria included a diabetes diagnosis for at least one year, aged 35 to 75, married for a minimum of 1 year, self-identified as Chinese American or Chinese, immigrated to the U.S. from mainland China or Hong Kong and having a spouse who would agree to participate. Exclusion criteria for patients included major diabetes complications (proliferative retinopathy, cerebrovascular accident or myocardial infarction within the last 12 months, renal insufficiency, or amputations) because our intent was to study patients who were early enough in the disease progression to benefit from behavioral and family interventions. A convenience sample was recruited from community clinics, community service organizations and via public notices in the San Francisco Bay Area in California. Six semi-structured interviews with couples in individual, couple and group contexts focused on illness understandings, perceptions of diabetes care, acculturation histories and concrete positive, negative and memorable narratives of diabetes care. Couples narrated in each other's presence (2 couple interviews) and in group interviews with those who shared their experience as a patient (2 group interviews) or spouse (2 group interviews). A subset of these informants (n=13) was also interviewed individually if extra time was needed to complete interview questions or if nondisclosure in shared interview settings suggested a private interview would yield more complete data. Interviews were conducted in Cantonese and audiotaped text was simultaneously translated from Cantonese to English and transcribed verbatim by skilled bilingual bicultural staff. Each audiofile was then reviewed and checked for accuracy by a separate bilingual bicultural staff member who had conducted the interview.

Narrative and thematic analyses were conducted by a multicultural and multidisciplinary team of Chinese American and European American nurses and psychologists (Benner, 1994; Cohen, Kahn, & Steeves, 2000). After all text was coded for thematic codes in Atlas-ti, complete text for two codes – "acculturation positive" and "acculturation negative" – were reviewed. "Acculturation positive" included examples of positive cultural adaptation experiences in the U.S. that supported diabetes management, including acculturation buffers or protective factors that mitigated acculturation stress and enhanced positive health perceptions. "Acculturation negative" included examples of negative cultural adaptation experiences that made diabetes management difficult, including acculturation stressors and challenges that compromised health perceptions. The analyzed text comprised over 465 pages of extracted text, and represented a broad inclusive portion of narratives drawn from interviews conducted in all three contexts (couple, group and individual interviews). Simultaneous to this thematic analysis, summaries for each couple were also constructed. Thus text for this manuscript was analyzed in the context of the holistic analysis of each couple's acculturation experiences.

To address generalizability, findings were presented to a separate respondent group of patients and spouses who met the same inclusion criteria as the informant group, a process known as member checking. Respondents (13 patients and 6 spouses) represented 16 separate families. They spoke Cantonese, resided in the U.S. for an average of 11.8 years (SD=12) and came from mainland China (46%) or Hong Kong (54%). On average, they were 60-years old (SD=9.4), reported 10.9 years of formal education (SD=5.2) and had been married for 32 years (SD=12.1). Thirty-two percent of respondents were employed and 83% had average household incomes of $20,000 or less. Patient respondents were 54% male and had been diagnosed for an average of 6.2 years (SD=4.2). All were treated with oral medications for diabetes. Hemoglobin A1c was not collected from respondents. Respondents met in separate patient groups and spouse groups for two 2-hour interviews to review themes presented in this manuscript for adequacy, and to add personal variations to the presented themes. Ethical approval for this study was obtained from the human subjects review boards at University of California, San Francisco and the University of San Francisco.

Results

Acculturation experiences affecting type 2 diabetes management and perceived health were identified from the narratives of Chinese immigrant patients (P) and spouses (S) in the current study. These acculturation experiences centered on three key themes: a) utilizing health care, b) maintaining family relations and roles, and c) establishing community ties and groundedness in the U.S. Participants reported variable acculturative stress levels across these themes that differentially affected their diabetes management practices and perceived health.

Utilizing Health Care

Chinese immigrant participants reported multiple acculturation experiences related to utilizing U.S. health care services and resources that affected their diabetes management and perceived health. These acculturation experiences included coping with language barriers to health care, accessing culturally-appropriate health care services, coping with economic hardship and insufficient health insurance coverage, and evaluating quality of diabetes care in the U.S.

Coping with language barriers to health care—Low English language proficiency was a salient acculturation stressor that complicated or limited access to health care services for Chinese immigrant participants. However, its effects on diabetes management and health perceptions were much broader and variable than what might be expected; it not only inhibited participants' communication with health care providers, but it also complicated their ability to fulfill more mundane diabetes management tasks such as scheduling medical appointments and purchasing over-the-counter diabetes care products (e.g., glucose monitors, glucose test patches). Daily demands of diabetes management were thus experienced as daily hassles that cumulatively became a source of stress and anxiety. For a few immigrants, acculturative stress from language barriers to care appeared to generalize to their daily functioning, undermining their sense of self-efficacy in managing their general health and well-being. This was poignantly expressed by the following participants who characterized their limited English language skills as a physical disability:

> Mr. P1 (54-years old):…a lot of people feel like they are crippled after they come here as if they have lost their leg. They can't go here, they can't go there.

> Mrs. S1 (55-years old): …for my husband and myself, it's equivalent to being crippled, dumb, and blind. It's really miserable!...When I first came here, I cried all the time….it was *really*, *really* difficult…

Accessing culturally-appropriate health care services—Language barriers to health care and resultant diabetes management difficulties were mitigated by culturally-appropriate health care services. Participants reported that bilingual Chinese medical staffs' knowledge of Chinese diet and food practices directly enhanced their diabetes management practices. Culturally-appropriate diabetes care however extended well-beyond staffs' bilingual skills and cultural knowledge. One patient attributed her successful diabetes management to a highly-regarded Chinese American nurse and certified diabetes educator who not only provided expert medical advice in Cantonese, but also essential emotional support. This patient and other participants concurred that emotional support was central to glucose control because it helped the "heart feel better." Thus, culturally-appropriate diabetes care was characterized as a holistic set of practices involving bilingual skills, cultural knowledge and emotional care.

> Mrs. P2 (51-years old):…I like to have someone like Ms. X who is an aide to diabetes patients. Not only she can help you resolve some problems, she can also

talk to you and she understands what you really think. After seeing her, it makes my heart feel so much better. When I came home, I checked my blood sugar; sometimes it would be a little bit lower….

Mr. P3 (54-years old): Your heart feels better, so it is lower.

Although many participants benefitted from Chinese-language health education materials, on-site translator services and ethnically-matched health care providers, not all considered them to be effective. A few patients explained that Chinese-language diabetes education materials offered simplistic or incomplete information on the nature of diabetes, the rationale for standards of diabetes care, and dietary recommendations for Chinese foods. Other participants expressed frustrations over lengthy waits for translation services and unprofessional translators:

Mrs. P4 (59-years old): Ai ya, those interpreters talk very fast. La-de-da….then they left. Even if you want to…ask a few questions, you can't... That's why there's a lot we don't understand.

Mr. S4 (64-years old): That's why even if the local county hospital has good doctors, we can't appreciate it or take advantage of it.

A few patients felt their ethnically-matched Chinese American physicians were less inclined to be courteous, patient and attentive than European American physicians. These patients were thus reluctant to ask diabetes care questions or share their health concerns with their Chinese American physicians. Chinese cultural norms reinforcing hierarchical doctor-patient relationships appeared to further impede direct and frank discussions with their Chinese American physicians. This was captured by the following patient who contrasted her experiences with her Chinese and European American physicians:

Interviewer: …the two doctors you see are Chinese. Do you feel that this helps?

Mrs. P5 (60-years old): No, I don't like it ….sometimes I find that because we are both Chinese there are even more things we cannot talk about….For instance, when I said that my hand hurt last month. She said, "Hey, that doesn't matter or whatever."

…Sometimes I feel that it's very difficult to speak clearly….It's not a problem with communication…sometimes I have… a mammogram. It's an American lady. I feel there are no problems…But the Chinese doctors, if you aren't controlling your diabetes, they'll…scold you,…some say, "You don't even listen to me!" They feel that you're damaging their reputation.

Interviewer: Especially Chinese doctors?

Mrs. P5: Of course! One doctor feels that his name is very important. What if you… 'drag him down'?

Interviewer: He would lose face.

Mrs. P5: *That's right*! He'd rather not see you.

Coping with economic hardship and insufficient health insurance coverage— Immigrant participants also had to cope with pronounced economic hardship and impoverished living conditions in the U.S. that heightened their acculturative stress and compromised their overall health perceptions:

Mr. P6 (73-years old): We rented this place on X Street…all Chinese lived there. Each floor had…thirteen households…Everyone shared a common kitchen and two

> bathrooms. The kitchen had one electric stove with four range tops. Thirteen households used it at the same time!

Economic hardship had a direct and negative impact on participants' diabetes management by restricting their access to comprehensive health insurance and preventive diabetes care:

> Mrs. P7 (70-years old):…I didn't know if my blood sugar was high or not…I didn't have medical insurance…I wasn't on any medication.

Self-described lower middle-class to middle-class participants expressed the most distress over inadequate health care coverage; they felt "caught in the middle" because they earned too much money to qualify for government health care subsidies, yet too little to independently afford comprehensive health insurance. Consequently, they felt socially marginalized and chronically anxious about their diabetes management and general health:

> Mrs. P8 (60-years old): …People like us are not rich, but we are not down and out either. For the poor people, it does not matter. They can apply for welfare….we are sandwiched in the middle.

> Mr. S8 (61-years old):…we worry about health care…The day that we don't have a job, the day we go without our doctors…what are we to do when our diabetes flares up?

Evaluating quality of diabetes care in the U.S—Participants' evaluations of quality of U.S. diabetes care also affected their diabetes management and health perceptions. Immigrants from mainland China, unlike those from Hong Kong, frequently praised the high quality of diabetes care in the U.S. The majority of mainland Chinese participants noted that they received more comprehensive and accurate health information about their illness than in China. Some also believed that U.S. physicians more clearly explained the importance of routine exercise, dietary restrictions, and monitoring weight than their mainland Chinese physicians. Perceptions of high-quality diabetes care in the U.S. had direct and positive effects on the diabetes knowledge and disease management practices of these mainland Chinese participants:

> Mrs. P9 (51-years old): When I was in mainland China, my knowledge of diabetes was inadequate….I didn't even think about diabetes, how it developed…To safeguard health, government health officials said that one should eat until feeling full, and to not catch a cold…that was about it…I thought that eating meat was nutritious….Now I know that…red meat is not beneficial, white meat is beneficial. Before in mainland China, nobody talked about red versus white meat…sometimes I ate day and night…at my upper limit…I didn't buy a lot of green vegetables… Vegetables are now my main staple instead of meats...I've turned this concept upside down.

Some mainland Chinese immigrants also felt that American physicians possessed higher professional and ethical standards than mainland Chinese physicians. They emphasized that U.S. physicians were more attentive to their health care needs, more personable, caring and less concerned about monetary gain. Such views contributed to an overall impression that seeing U.S. health care providers significantly improved their diabetes management:

> Mrs. P10 (71-years old): …The doctors in the U.S. are very good to old folks….They are very concerned, really…..The mainland medical staff are terrible. If you…ask for a checkup…they won't examine you.

> Mr. S10 (72-years old): In extreme cases they examine you right away, as long as you pay more…It's called…"special registration"….The most important thing is that you need to have money…If you don't have money, nothing goes….

Maintaining Family Relations and Roles

Acculturation experiences involving maintenance of family relations and roles in the U.S. also influenced diabetes management and perceived health in complex ways. Acculturation experiences in this area encompassed coping with separation from overseas family members, maintaining filial piety and respect for elders, and fulfilling family role obligations and expectations in the U.S.

Coping with separation from overseas family members—For some participants, separation from family members living overseas resulted in heightened isolation, loneliness, and depressive symptoms, which compromised their diabetes management and perceived health. One mainland Chinese couple shared their despair over diminished family activities and support in the U.S.:

> Mr. S11 (64-years old): All in all, having left home, there is not as much warmth in the U.S. and the atmosphere is not as festive, not as fun as our mainland China home. …The main point is that we have few relatives and friends here.
>
> Mrs. P11 (59-years old): A lot fewer….We are trapped here compared to being at home in China…

A few participants described added pressures to support overseas family members who believed that they had gained considerable wealth in the U.S. Such family expectations for transnational remittances added to participants' financial burdens, heightened their acculturative stress and elicited family conflict as they struggled to meet their diabetes care costs.

> Mr. P12 (54-years old): ….family conflict, a lot of people have this…especially Asian families, after they immigrate over here…the average person in China believes that when people come here, they do a lot better and earn a lot of money… consequently, they feel that you're obligated to help them…. But sometimes a person doesn't necessarily make that much money, and can't help them even if he wanted to. Then they get mad at you...

Other participants reported neutral or positive responses to family separation. In regard to the former, a few participants reported that their diabetes management and perceived health were unaffected by family separation because they already had limited family interactions while in their countries of origin. A few participants reported positive responses to family separation because it relieved them of pressing family obligations, resulting in less stress and more time to manage their diabetes. One female patient punctuated this point; she characterized family and social life in the U.S. as "more relaxing" and she believed that this acculturation shift in family relations was "better for your body and emotional health."

Maintaining filial piety and respect for elders—Immigrant participants also reported varied acculturation experiences around their families' maintenance of filial piety and respect for elders since moving to the U.S. Some participants expressed concern that the individualistic cultural orientation in America eroded these cultural values and thus undermined family relations:

> Mrs. S13 (60-years old):… My husband's younger brother only lives a few block away, but he still doesn't…walk over to visit us. There are no feelings of family closeness…. Interviewer: So you feel more isolated here?
>
> Mrs. S13: Yes.

Elderly immigrants were especially worried about the loss of these cultural values and expressed deep dissatisfaction with highly acculturated American-born Chinese youth:

> Mr. P14 (75-years old): the American-born Chinese…their feelings of kinship are even…
>
> Mrs. P15 (60-years old): Thinner.
>
> Mr. P14: …our generation, the ones who immigrated from Hong Kong, Taiwan, or Mainland China, have more of feelings of kinship….the American-born girls and boys… don't have it.
>
> Mrs. P15: It's…not as rich and strong….

Participants feared losing family support when faced with diabetes complications and anticipated age-related health problems; collectively, they expressed both distress and resignation about unfilial Chinese American youth and the need to be self-sufficient in their diabetes management as they grew older and frailer.

> Mrs. S16 (55-years old): Sometimes when my husband sees someone walking with a cane…on the street, he says, "…American-born kids, a lot of them are not filial towards their parents. They leave home when they're in their teens. They don't care about their parents."…. I'm worried that nobody would come to see us…it's the same as having nobody to take care of us. I see a lot of people in that situation…it's so miserable…The children in Hong Kong and mainland China are different. They have a lot of filial piety towards their parents. They see their parents *no matter what*.

Still, some participants' families successfully maintained filial piety and respect for elders, which was manifested in instrumental and emotional family support. Instrumental family support included financial, legal, housing and transportation assistance, and help with identifying government subsidies and health care services. Emotional family support involved showing care, concern, and offering reassurance as participants adjusted to U.S. society. Such emotional and instrumental support reduced participants' acculturation stress and improved their diabetes management by alleviating acculturation demands and facilitating bicultural competencies:

> Interviewer: Do you feel that living with your son and your daughter-in-law whom have been here longer has helped you adapt faster to a new life in the U.S.?
>
> Mr. S17 (72-years old): It has….because my daughter-in-law talks about …the good points about the U.S…For example, how nice the weather is or if one wants something all one has to do is work hard…and that it can be easily obtained…She loves to be in the U.S...We all understand "the importance of maintaining respectful and caring relationships" [人情世故]…thus, there's no conflict…
>
> Interviewer: So what have they done to help you adapt to life in the U.S.?
>
> Mrs. P17 (71-years old): When we first came here, our daughter-in-law took us everywhere to take care of business…to apply for,…a green card, healthcare card, to find a family doctor.
>
> Mr. S17: …A lot of people need help processing these things when they first come over. But afterwards, when we know how, we try to do as much as possible by ourselves.

Fulfilling family role obligations and expectations in the U.S—Other immigrant couples discussed how their diabetes management and health were affected by changing family role obligations and expectations in the U.S. For some couples, traditional gender roles shifted, became less salient or even reversed. Husbands became unemployed or could no longer serve as the sole household provider. Wives sought new educational opportunities

or employment outside of the home, assumed greater family decision-making and financial responsibilities, and achieved greater independence. As a result, shifts in traditional marital roles, responsibilities and power elicited marital conflict and undermined spousal collaboration on diabetes management. The patient with diabetes below described her conflicted feelings over fulfilling her family role expectations while pursuing her educational goals. Her husband's unwillingness to assist with household duties compounded her acculturative stress, leaving her feeling alone and unsupported in the family and in her diabetes management efforts:

> Mrs. P18 (60-years old): ….A few years ago, I went to school. My husband never encouraged me to go to school. So before I went to school, I had to cook dinner and make food for him to eat. After school, I washed the dishes for him. That's how I did it so it wouldn't affect him. I never affect my family with my private business. In regard to household chores...my husband doesn't help me out so I do everything myself…it affects my emotional stability. You have to do all this work yourself and there's no one to help you…

One unemployed male patient experienced loss of face from gender role reversals that, in his opinion, were exacerbated by his illness condition. He noted that his diabetes dietary restrictions precluded him from eating rice, which weakened his physical strength and further inhibited him from fulfilling his role as the primary household provider.

> Mr. P19 (52-years old): My physical abilities have diminished...I am not able to help my family…If I…didn't have any illness…I could wash dishes in restaurants or do whatever to lighten my family's financial burdens. This is pretty much what I'm *most* unhappy about, what I feel the *most* pressure from…..even though my wife and children don't fault me… since I got the disease, this is what has caused me and my family the most unhappiness….
>
> Interviewer: You said that your physical strength is not that good. Are you saying specifically that it is due to diabetes…?
>
> Mr. P19: It is directly from diabetes…you can't even eat much rice. If you eat more, your blood glucose would go up. If you eat less, then your physical strength is deficient.

Still, gender role reversals did not consistently elicit marital conflict and diabetes management problems for all participants. One male patient expressed relief and appreciation for his wife's new role as the primary household provider because it allowed him to enjoy his retirement and attend to his diabetes and overall health:

> Mr. P20 (52-years old): …I feel very happy (smiles). Our positions have reversed, do you understand? It is my wife who takes a job…my wife is faultless, even my friends say so (smiles)…"You found a wife like that? You're lucky!" That's why, In regard to role reversals, now it's my wife who makes money. (Chuckles)…It's not a problem….I'm very happy.

Older participants reported shifts in their family roles as grandparents involving weightier childcare and household responsibilities. Although grandparents traditionally assume active family roles in Chinese culture, economic pressures and labor demands on younger immigrant family members in the U.S. necessitated greater family involvement. As a result, these immigrant grandparents reported significant acculturation stress, feelings of being "trapped" in their families, increased marital conflict, and having little time to properly care for their diabetes:

> Mr. S21 (72-years old): My wife always says that she likes being in the U.S.! I said, "I'd rather go back to China. I don't want to be here."…She said, "If you want

> to go back, you go back by yourself." I said that I wanted to return to China because I didn't have to work there…I was retired…I went out for tea with my friends. Here? I'm cooped up all the time looking after the grandchildren. They're noisy and they stress me out....I really don't like to be here….now my daughter gave birth to one more….I can't leave anymore.

Establishing Community Ties and Sense of Groundedness

Acculturation experiences related to establishing community ties and groundedness or feeling anchored in the U.S. also affected participants' diabetes management and perceived health. Relevant acculturation experiences included relocating to ethnically-matched or -similar neighborhoods, coping with status inconsistency, and evaluating work and physical environments in the U.S.

Relocating to ethnically-matched neighborhoods—Participants reported strong community ties and groundedness when relocating to ethnically-matched neighborhoods like San Francisco Chinatown because it diffused language stressors, made them feel at ease and at home, and permitted gradual cultural adjustment to the U.S. It also supported cultural maintenance of valued Chinese dietary practices to manage their diabetes.

> Mr. P22 (70-years old): We don't have any big problems…there are a lot of Chinese here…People can help and communicate with each other….So we adapt step by step…It's as if I'm in my home country and village….The foods we eat, the living customs are more or less the same…

Still, a few Chinese participants did not feel tied to or grounded in Chinatown because they did not identify with its historically dominant Toisanese culture and dialect. Although these participants were ethnic Chinese, they did not claim family and cultural roots in Toisan County in the Guangzhou Province, which has long historical ties to Chinatown. As a result, they felt culturally and linguistically isolated in their Chinatown environs which increased their acculturative stress and contributed to negative health perceptions. The following participants shared their feelings of marginalization and experiences of acculturative stress:

> Mr. S23 (64-years old):… at first, I didn't want to go out…the languages spoken don't sound pleasant to my ears and the food doesn't taste good…the Toisan dialect…their accents sound so heavy.
>
> Mrs. S24 (66-years old): The Sze Yap dialect is also hard to understand…Very harsh to the ears.
>
> Interviewer: So you aren't used to hearing it.
>
> Mr. S25 (68-years old): Right, I'm not used to hearing it. It's like when we hear Vietnamese, we aren't used to it.
>
> Mr. S23: It's like "not seeing any relatives when you look up" [舉目無親].

Coping with status inconsistency—Weak community ties and groundedness were also associated with experiences of status inconsistency or the loss of socio-occupational status and prestige in the U.S., which elicited considerable acculturative stress and poor perceptions of well-being for some participants:

> Mrs. S26 (66-years old): Many people have asked us, "Why did you come here? … you were "people above everyone" [人上人] and you came here to be third class citizens. That's the truth because we were doctors over there…people really respected us...But when you come here, no one knows who you are.

The wife above believed that her husband's status inconsistency and declining health in the U.S. contributed to his loss of face, concerns about burdening others, and depression. She felt that the confluence of these factors compromised his diabetes management, most noticeably by inhibiting his social and physical activity:

> Mrs. S26: He should go out more often and make contact with other people….and take a walk outside….his mood may get better this way. It's better than staying home all the time…he gets so depressed…Has he thought about changing his quality of life?..No, he's very stubborn. He is concerned about his "face."

Evaluating work and physical environments in the U.S—Positive evaluations of new work and physical environments in the U.S. however strengthened groundedness in the U.S. and supported diabetes management and health. For instance, improved work conditions provided a sense of stability, security and newfound freedom to pursue more family and health-promoting activities. The spouse below explained how his wife's less stressful work environment in the U.S. improved her overall health and their joint diabetes management practices and marriage:

> Mr. S27 (58-years old):…my wife's job pressure was *very* high in Hong Kong. Pressure can really affect a person's emotional state….After she came here, the pressure wasn't as great…we have more time together…I walk with her in the park several times a week….she didn't even like to walk for half an hour in Hong Kong…she has a more cheerful disposition, she controls her diet better and she experiences less stress…This is much better for her illness. Her entire person, the color of her face and other things are much better…

A majority of participants also praised the physical environment in the U.S., lauding its clean air, mild and comfortable weather, greenery and parks and relatively uncrowded conditions unlike their Asian home countries. Such positive views strengthened their ties to and groundedness in the U.S. and affirmed their decision to resettle in this country:

> Mrs. S28 (55-years old): Returning to Hong Kong would cause a lot of discomfort.
>
> Mr. P28 (54-years old): Of course it's more comfortable living here….You rarely sweat…There's more space, the weather is good. That's how it is - more comfortable…..
>
> Mrs. S28:…I feel more comfortable now that I'm back in the U.S...I'm a naturalized American citizen. I wish to be an American. I do not wish to be in Hong Kong. ….I feel that my attitude is more like that of an American, not like that of a Chinese person. This is how I feel. Truly.

Participants directly linked improvements to their physical environment with better diabetes management. They spoke favorably about having expanded opportunities for exercise, recreation, and relaxation in the U.S., which encouraged them to acquire new health promoting behaviors:

> Mr. S29 (67-years old): I learned to sun bathe here. Plus I go to places where I can enjoy nature more frequently…Before I did not.
>
> Interviewer: Why did this change?
>
> Mr. S29: It's because there are more lawns here… a lot of parks. Plus I see a lot of people resting here,…lying down to sun bathe. So I learned from them. It's really nice.

Some participants even believed that the healthier environment in the U.S. conferred greater longevity:

Mrs. P30 (52-years old): People here do live longer.

Mr. P31 (70-years old): That's right…for one thing the air is good, the health care is good, right?...The entire social condition and other areas of life…That's why people live longer lives.

Discussion

The current study's findings reveal a complex and multifaceted relationship between acculturation and diabetes management and perceived health. This was illustrated by the broad scope, varying salience, and differential impact of participants' acculturation experiences. In regard to scope, participants reported a wide range of acculturation experiences covering three key themes: a) utilizing health care, b) maintaining family relations and roles, and c) establishing community ties and groundedness in the U.S. Such a broad scope of acculturation experiences highlights the need to expand the parameters in which acculturation is conceptualized and measured in health research. Most studies employ proxy or self-report acculturation measures that do not directly or comprehensively assess such broad acculturation influences on diabetes and health (Chun, 2006; Perez-Escamilla & Putnik, 2007; Salant & Lauderdale, 2003). Widely-used self-report acculturation scales primarily focus on select acculturation domains including ethnic media, food, music, clothing and language preferences, ethnic composition of social networks, birthplace, involvement in cultural holidays and traditions, and cultural values and identity (Zane & Mak, 2003). In the current study, however, participants' acculturation experiences extended well-beyond these domains and involved multiple acculturation stressors and buffers that collectively impacted their diabetes management and health in distinct and unexpected ways. This was especially seen for shifting family roles and evaluations of diabetes care and the physical environment in the U.S. which differentially and significantly affected diabetes management and health, yet are not traditionally assessed in acculturation and health research.

The salience of certain acculturation experiences, including what participants considered particularly stressful or helpful in managing their diabetes and health in a new cultural setting, varied across participants and was tied to their diverse backgrounds. Elderly participants were more concerned over the loss of filial piety and interdependent family relations than younger participants because they feared losing family support to cope with age-related health problems. Also, self-described lower-middle to middle-class participants, unlike those who were more impoverished, were more distressed over inadequate health insurance coverage because they did not qualify for government health care subsidies. These findings highlight the need for flexible assessment approaches, including open-ended or semi-structured interviews, allowing immigrants themselves to identify and describe their most pressing acculturation and health concerns (Chun & Akutsu, 2009).

In terms of impact of acculturation experiences, similar cultural adaptation experiences often affected diabetes management and perceived health in variable ways. For instance, family separation undermined diabetes management for participants feeling distressed over the loss of family support, supported diabetes management for those feeling relieved of family obligations, and had little or no impact on diabetes management for those reporting no changes to their family life. Likewise, relocating to San Francisco Chinatown promoted positive diabetes management for some participants by supporting valued Chinese food practices and mitigating language stressors. Yet for others, relocating to this neighborhood compromised diabetes management and health because they felt culturally and linguistically marginalized in Chinatown's Toisanese environs. Thus, the diverse contexts in which acculturation unfolds, including distinct family, community, and environmental contexts,

must be considered to discern how and why specific acculturation experiences might impact health in varied ways (Chun, 2006; Sue, 2003; Trimble, 2003).

The current study's findings have important implications for developing culturally-appropriate diabetes management recommendations for Chinese immigrants and their families. In regard to utilizing health care, developing Chinese language diabetes education materials for diverse segments of the immigrant community is warranted. Additionally, training bilingual and ethnically-matched health care staff to address immigrant patients' emotional concerns about diabetes and Chinese cultural norms influencing patient-provider interactions (e.g., respecting authority figures, avoiding loss of face) deserve special consideration. In regard to family relations and roles, acculturation shifts in patients' family role expectations, responsibilities, and family support should be routinely assessed to identify related acculturative stress levels and diabetes management concerns. Lastly, expanded and individually-tailored assessment of patients' cultural, linguistic and regional backgrounds, occupational status, and daily living environments can help reveal the nature of their community ties and groundedness and their significance to diabetes management and health.

In sum, the current study's findings show that acculturation experiences affect diabetes management and health in complex ways due to immigrants' distinct individual characteristics (e.g., age, gender, regional and linguistic background, socioeconomic status), repertoire of skills (e.g., language abilities, cultural knowledge), acculturation goals and motives (e.g., pursuing new educational opportunities, resettling in a healthier and more desirable living environment), acculturation demands (e.g., pressures to speak English and navigate the U.S. health care system), and coping resources (e.g., availability of culturally-appropriate health care services and government health care subsidies). Qualitative research methods create new opportunities to explore how these factors collectively and simultaneously affect diabetes management, thus providing a richer and more holistic understanding of acculturation influences on immigrant health.

Limitations to the current study include the focus on Cantonese-speaking Chinese immigrants. This linguistic dialect is predominant among Chinese immigrants in the San Francisco region where this study was conducted. Future studies should include the growing numbers of Mandarin-speaking Chinese immigrants in the U.S. with distinct sociocultural backgrounds and life experiences. Additionally, future investigations should include the perspectives of other family members such as children, siblings, and extended family in multigenerational immigrant households and the perspectives of widowed or unmarried persons with diabetes. Expanded analyses of different family relationships and structures can deepen our understanding of Chinese immigrant family acculturation processes and their significance to diabetes management and health. Also, potential age-related differences in acculturation experiences were not fully examined in this study and should thus be included in future research. Lastly, future investigations should identify culturally-appropriate diabetes interventions, including bicultural competencies and skills development, that facilitate diabetes management in different cultural settings.

Acknowledgments

This work was supported by the National Institute of Nursing Research Grant R01-NR009111 (Principal Investigator: Catherine A. Chesla). We thank the following organizations and individuals: the California Pacific Medical Center; the Chinese Community Health Resource Center; Donaldina Cameron House; North East Medical Services; University of California San Francisco (UCSF) Diabetes Teaching Center; UCSF Lakeshore Family Practice; Peggy Huang; Kenneth Chang; Y.H. Cheng; Eunice Lew; Phiona Tan; Barbara Jung, and Ivan Wu.

References

Abate N, Chandalia M. The impact of ethnicity on type 2 diabetes. Journal of Diabetes and Its Complications 2003;17:39–58. [PubMed: 12505756]

Abe-Kim J, Okazaki S, Goto SG. Unidimensional versus multidimensional approaches to the assessment of acculturation for Asian American populations. Cultural Diversity and Ethnic Minority Psychology 2001;7(3):232–246. [PubMed: 11506070]

Benner, PE. Interpretative phenomenology: Embodiment, caring, and ethics in health and illness. Thousand Oaks, CA: Sage Publications; 1994.

Candib LM. Obesity and diabetes in vulnerable populations: Reflection on proximal and distal causes. Annals of Family Medicine 2007;5(6):547–556. [PubMed: 18025493]

Chesla CA, Chun KM. Accommodating type 2 diabetes in the Chinese American family. Qualitative Health Research 2005;15(2):240–255. [PubMed: 15611206]

Chesla CA, Chun KM, Kwan CML. Cultural and family challenges to managing type 2 diabetes in immigrant Chinese Americans. Diabetes Care 2009;32(10):1812–1816. [PubMed: 19628812]

Chun, KM. Conceptual and measurement issues in family acculturation research. In: Bornstein, MH.; Cote, LR., editors. Acculturation and parent-child relationships: measurement and development. Mahwah, N.J: Lawrence Erlbaum Associates; 2006. p. 63-78.

Chun, KM.; Akutsu, PD. Assessing Asian American family acculturation in clinical settings: Guidelines and recommendations for mental health professionals. In: Trinh, N-H.; Rho, YC.; Lu, FG.; Sanders, KM., editors. Handbook of mental health and acculturation in Asian American families. New York: Humana Press; 2009. p. 99-122.

Chun, KM.; Balls Organista, P.; Marin, G., editors. Acculturation: Advances in theory, measurement, and applied research. Washington, D.C: American Psychological Association; 2003.

Chun KM, Chesla CA. Cultural issues in disease management for Chinese Americans with type 2 diabetes. Psychology and Health 2004;19(6):767–785.

Chun, KM.; Morera, O.; Andal, J.; Skewes, M. Conducting research with diverse Asian American groups. In: Leong, FTL.; Inman, AG.; Ebreo, A.; Yang, L.; Kinoshita, L.; Fu, M., editors. Handbook of Asian American psychology. 2. Thousand Oaks, CA: Sage Publications; 2007. p. 47-65.

Cohen, MZ.; Kahn, DL.; Steeves, RH. Hermeneutic phenomenological research: a practical guide for nurse practitioners. Thousand Oaks, CA: Sage Publications; 2000.

Fisher L, Chesla CA, Chun KM, Skaff MM, Mullan JT, Kanter RA, et al. Patient-appraised couple emotion management and disease management among Chinese American patients with type 2 diabetes. Journal of Family Psychology 2004;18(2):302–310. [PubMed: 15222837]

Gomez SL, Kelsey JL, Glaser SL, Lee MM, Sidney S. Immigration and acculturation in relation to health and health-related risk factors among specific Asian subgroups in a health maintenance organization. American Journal of Public Health 2004;94(11):1977–1984. [PubMed: 15514240]

Green AR, Ngo-Metzger Q, Legedza ATR, Massagli MP, Phillips RS, Iezzoni LI. Interpreter services, language concordance, and health care quality: Experiences of Asian Americans with limited English proficiency. Journal of General Internal Medicine 2005;20:1050–1056. [PubMed: 16307633]

Hosler AS, Melnik TA. Prevalence of diagnosed diabetes and related risk factors: Japanese adults in Westchester County, New York. American Journal of Public Health 2003;93(8):1279–1281. [PubMed: 12893613]

Huang B, Rodriguez BL, Burchfiel CM, Chyou PH, Curb JD, Yano K. Acculturation and prevalence of diabetes among Japanese-American men in Hawaii. American Journal of Epidemiology 1996;144(7):674–681. [PubMed: 8823064]

Jayne RL, Rankin SH. Application of Leventhal's self-regulation model to Chinese immigrants with type 2 diabetes. Journal of Nursing Scholarship 2001;33(1):53–59. [PubMed: 11253580]

Kandula NR, Diez-Roux AV, Chan C, Daviglus ML, Jackson SA, Ni H, et al. Association of acculturation levels and prevalence of diabetes in the Multi-Ethnic Study of Atherosclerosis (MESA). Diabetes Care 2008;31(8):1621–1628. [PubMed: 18458142]

Lu N, Cason KL. Dietary pattern change and acculturation of Chinese Americans in Pennsylvania. Journal of the American Dietetic Association 2004;104:771–778. [PubMed: 15127063]

Marin, G.; Balls Organista, P.; Chun, KM. Acculturation research: Current issues and findings. In: Bernal, G.; Trimble, JE.; Leong, FTL.; Burlew, AK., editors. Handbook of racial and ethnic minority psychology. Thousand Oaks, CA: Sage Publications; 2003. p. 208-219.

McDonald JT, Kennedy S. Is migration to Canada associated with unhealthy weight gain? Overweight and obesity among Canada's immigrants. Social Science & Medicine 2005;61:2469–2481. [PubMed: 15972242]

McNeely MJ, Boyko EJ. Type 2 diabetes prevalence in Asian Americans: results of a national health survey. Diabetes Care 2004;27:66–69. [PubMed: 14693968]

Miltiades HB, Wu B. Factors affecting physician visits in Chinese and Chinese immigrant samples. Social Science & Medicine 2008;66:704–714. [PubMed: 17996348]

Myers, HF.; Rodriguez, N. Acculturation and physical health in racial and ethnic minorities. In: Chun, KM.; Balls Organista, P.; Marín, G., editors. Acculturation: Advances in theory, measurement, and applied research. Washington, D.C: American Psychological Association; 2003. p. 163-185.

Ngo-Metzger Q, Massagli MP, Clarridge BR, Manocchia M, Davis RB, Iezzoni LI, et al. Linguistic and cultural barriers to care: Perspectives of Chinese and Vietnamese immigrants. Journal of General Internal Medicine 2003;18:44–52. [PubMed: 12534763]

Perez-Escamilla R, Putnik P. The role of acculturation in nutrition, lifestyle, and incidence of type 2 diabetes among Latinos. The Journal of Nutrition 2007;137:860–870. [PubMed: 17374645]

Salant T, Lauderdale DS. Measuring culture: A critical review of acculturation and health in Asian immigrant populations. Social Science & Medicine 2003;57:71–90. [PubMed: 12753817]

Satia JA, Patterson RE, Kristal AR, Hislop TG, Yasui Y, Taylor VM. Development of scales to measure dietary acculturation among Chinese-Americans and Chinese-Canadians. Journal of the American Dietetic Association 2001;101(5):548–553. [PubMed: 11374348]

Shinagawa, LH.; Kim, DY. A portrait of Chinese Americans. College Park, MD: OCA and University of Maryland, Asian American Studies Program; 2008.

Sue, S. Foreword. In: Chun, KM.; Balls Organista, P.; Marin, G., editors. Acculturation: Advances in theory, measurement, and applied research. Washington, D.C: American Psychological Association; 2003. p. xvii-xxi.

Suinn RM, Ahuna C, Khoo G. The Suinn-Lew Asian Self-Identity Acculturation Scale: Concurrent and factorial validation. Educational and Psychological Measurement 1992;52:1041–1046.

Trimble, JE. Introduction: Social change and acculturation. In: Chun, KM.; Balls Organista, P.; Marin, G., editors. Acculturation: Advances in theory, measurement and applied research. Washington, D.C: American Psychological Association; 2003.

Unger JB, Reynolds K, Shakib S, Spruijt-Metz D, Sun P, Johnson CA. Acculturation, physical activity, and fast-food consumption among Asian-American and Hispanic Adolescents. Journal of Community Health 2004;29(6):467–481. [PubMed: 15587346]

Ying YW. Cultural orientation and psychological well being in Chinese Americans. American Journal of Community Psychology 1993;23(6):893–911. [PubMed: 8638555]

Zane, NWS.; Mak, W. Major approaches to the measurement of acculturation among ethnic minority populations: a content analysis and alternative empirical strategy. In: Chun, KM.; Balls Organista, P.; Marin, G., editors. Acculturation: Advances in Theory, Measurement, and Applied Research. Washington, D.C: American Psychological Association; 2003. p. 39-60.