J Community Nutrition 5(4) : 246~253, 2003

Dietary Acculturation in Korean Americans

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ABSTRACT

With globalization taking place at a rapid speed, more and more people move from one place to another and more people with diverse cultural backgrounds are now living together than ever before. As a result, more people go through the process of acculturation. Dietary acculturation, a part of overall acculturation, is a series of changes that occur in food and nutrient consumption and dietary behaviors. This paper examined dietary acculturation in Korean Americans through a critical literature review. The current diet quality of Korean Americans is fair, and the areas in need of improvement include sodium, calcium, and fiber intakes. Korean Americans had different diet profiles by acculturation status ; however, whether dietary acculturation leads to a lower diet quality is not conclusive at this time. This paper also suggests areas that warrant consideration in future research : 1) acculturation measures, 2) dietary measures, 3) possible factors affecting dietary acculturation, 4) health consequences of dietary acculturation, and 5) study design issues. Studying dietary acculturation among immigrants and their offspring is important because it will provide useful insights for designing health and nutrition interventions in both original and new countries. Quality research in dietary acculturation requires collaborations among researchers from different nations because it deals with diverse cultures. (*J Community Nutrition* 5(4) : 246~253, 2003)

KEY WORDS : submitted to the journal of community nutrition.

Introduction

As globalization progresses in the world, more and more people move from one place to another. In addition, cultural products cross the borders between nations more easily than ever, providing people with exposures to foreign cultures. When different cultures meet in one place and time, acculturation occurs. Acculturation is the process of overall adaptation on both individual and group levels, including cultural, psychological, social, economic, and political aspects (Berry 1997 ; Lee et al. 2003).

Two models (unidimensional vs. bidimensional) of acculturation have been used in acculturation studies (Berry 1997 ; Bourhis et al. 1997 ; Keefe, Padilla 1987 ; Nguyen et al. 1999). The unidimensional model conceptualizes the process of acculturation as linear, where unacculturated individuals become more acculturated as they acquire new cultural traits and lose their traditional cultural traits. That is, the unidimensional model views the process of acculturation as a zero-sum tradeoff. On the other hand, the bidimensional model conceives that acquiring new cultural traits is independent of losing traditional cultural traits, allowing diverse outcomes. Berry (1992 ; 1997) proposed four forms of acculturation depending on the extensiveness of relationships to new and old societies : integration, assimilation, segregation, and marginalization. Integration occurs when immigrants have a positive relationship to a new society as well as to their original society. Assimilation involves the process of relinquishing original cultural identity and becoming part of a new society. Segregation occurs when immigrants retain their original sociocultural domains without adopting those of a new society. Marginalization is the result of losing relationships with both the original and new societies. The two acculturation models operate under different schools of philosophy in immigration and adaptation ; however, they are not mutually exclusive. For example, the unidimensional model can explain the assimilation and the segregation forms of

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adaptation among the four forms from the bidimensional model. That is, the bidimensional model is more comprehensive than the unidimensional model.

Among many cultural traits, diet is of importance because it has a direct impact on health. The term, dietary acculturation, refers to changes that occur in food and nutrient consumption and dietary behaviors as individuals adapt to a new culture or society. Dietary acculturation should be considered as a part of the overall acculturation process, rather than as a consequence of overall acculturation (Lee, Sobal, Frongillo 1999b). Dietary acculturation has many different aspects such as changes of food items consumed, changes of cooking methods, or changes of eating behaviors and attitudes, to name a few. Studies have reported that the dietary quality of the second generations of Mexican Americans is lower than that of the first generations, despite that the second generations were more educated and had higher incomes (Guendelman, Abrams 1995). If this inverse relationship between dietary acculturation and dietary quality is to be true in Korean Americans, one can assume that higher incidence and prevalence of obesity and chronic diseases will follow. Thus, this paper aims to critically examine the current status of dietary acculturation among Korean Americans, specifically asking if dietary acculturation is inversely related to dietary quality. This paper will also suggest areas that warrant consideration in future research.

Korea has experienced rapid changes in many areas including diet, transportation, and physical activity, propelled by economic development (Lee, Sobal 2003). Because the U.S. started the process of economic development earlier than Korea, the societal environments Korean Americans are currently living may show what the environments of Korea might be in the near future, if appropriate interventions are not implemented. Therefore, studies on Korean Americans may shed light on what health interventions are needed. This analogy can be applied to most developing countries from which a substantial number of people have immigrated to the U.S. or other developed countries.

Although Korean immigration to the U.S. started as early as about 1880, the majority came after the Immigration Reform Act of 1965 (Hurh 1998 ; Hurh, Kim 1984). The Immigration Reform Act of 1965 opened the gate to immigration from non-European countries. Most recent Korean immigrants were already well educated, and had been successful in establishing businesses in the U.S. (Kim, Naughton 1993). Korean Americans generally live in or near large cities with Korean enclaves, and tend to maintain their ethnic identity (Hurh 1998 ; Hurh, Kim 1984). Korean Americans are a significant and fast-growing ethnic group in the U.S., with over one million Korean Americans, contributing 10% of the Asian American population and 0.4% of the total U.S. population (Census of Population, Housing 2000, 2001).

Method

This paper examined the current status of acculturation with a specific hypothesis that acculturation is inversely related to dietary quality. A Meta Analysis strategy was applied using published results. Meta Analysis is "the statistical analysis of a collection of individual studies (Runder et al. 2002)." This method allows critically examining the relationships between an independent variable and a dependent variable through statistical analyses treating the reported outcomes as primary data.

A thorough literature search was conducted with three health and nutrition-related databases (Academic Primer (EBSCOhost), Digital Dissertation, and Medline), using keywords of "Korean" and one of the following : "food," "diet," or "nutrition." Publication dates were limited to the last 33 years, from 1970 to 2003, although there were few manuscripts published prior to 1970. From Academic Primer, the search with "Korean" and "food" produced a total of 222 manuscripts, the search with "Korean" and "diet" produced 24 manuscripts, and the search with "Korean" and "nutrition" produced 45 manuscripts. From the manuscripts, four manuscripts were found to report on dietary acculturation in Korean Americans. The search with Digital Dissertation using "Korean" and "food" found 46 dissertations, the search with "Korean" and "diet" 13, and the search with "Korean" and "nutrition" six. This search with Digital Dissertation resulted in a total of seven dissertations relevant to this paper. Lastly, the search with 'Korean" and "food" with Medline indicated that there were 72 manuscripts, the search with "Korean" and "diet" 61, and the search with "Korean" and "nutrition" 23. Among those manuscripts, only five manuscripts examined dietary acculturation in Korean Americans. Several manuscripts were found

Table 1. Published articles and unpublished dissertations on dietary acculturation in Korean Americans (KA)

Authors	Citation	Study population	Sampling methods*	Data collection#	Acculturation measures	Dietary assessment method	Major findings
Cross NA, Kim KK, Yu ESH, Chen EH, Kim J	JADA[1] 2002 ; 102 : 552–554	105 KA (40% men) in Chicago areas. Age : 56.4 ± 7.6 (40–69 yr)	2	2	Length of residence (8.1 ± 5.4 years)	Modified HHHQ[a]	The average Healthy Index Score was 73. Problematic areas were sodium and dairy
Gordon BHJ, Kang SY, Cho P, Sucher KP	JADA[1] 2000 ; 100 : 1198–1200	193 KA (50% men) in San Francisco Bay Area. Age : 19+ (76%, 19–54 yr)	1	1	Length of residence in US (60%, ≥ 10 years) Language used at home (40%, Korean only)	Modified Sanjur's FFQ[b]	No significant changes by length of residence
Kang HL, Garey JG	TCL[2] 2002 ; 17 : 31–43	191 first-generation KA (23% men) in New York City and Honolulu. Age : 82% over 30 yr old	1	1	Length of residence (11 ± 8 years) Age at arrival in the U.S. (30 ± 10 yr)	Questions on food behaviors	The relationships between acculturation and food behaviors were not linear
Kim JS, Chan MM, Shore RE	IJFSN[3] 2002 ; 53 : 12–142	73 KA (33% men) in New Jersey Age : 38.6 ± 11.7	1	1	Length of residence (9.8 ± 5.7)	FFQ developed for KA	(Acculturation was not a main impendent variable in this study.)
Kim KK, Yu ESH, Chen EH, Cross N, Kim JK, Brintall RA	ONF[4] 2000 ; 27 : 1576–1583	105 KA (40% men) in Chicago areas. Age : 56.4 ± 7.6 (40–69 yr)	2	2	Length of residence (8.1 ± 5.4 years)	Modified HHHQ[b]	Increase in consumption was reported in beef, fruit, dairy products, bread, soda or coffee ; decrease in fish and rice or other grains
Lee SK, Sobal J, Frongillo EA	JADA 1999 ; 99 : 1084–1089	348 KA (58% men) in the continental US. Age: 41 ± 14 (17–90)	2	1	Lee's acculturation scale	Modified Willett's FFQ	1) Acculturation was inversely related to "Korean" food consumption, while it was positively related to "American" food consumption. 2) Dietary quality did not vary by acculturation status
Oh KE	2000[5]	230 KA adolescents in LA	1	1	Korean language proficiency	24-hr recall, modified FFQ for snack foods	Greater Korean language adherence predicted a higher healthy eating index score
Park SY, Paik HY, Skinner JD, Ok SW, Spindler AA.	JNEB[6] 2003 ; 35 : 142–147	225 KA mothers in California and 216 Korean mothers in Seoul. Age : approximately 44 years	1	1	Modified Lee's acculturation scale	Questions on food behaviors	Family of the more acculturated mothers tended to eat out more and lower preferences for Korean foods

* : Sampling methods : 1) Convenient sampling and 2) random sampling, # : Data collection methods : 1) self-administered questionnaire and 2) face-to-face interview,
[1]Journal of the American dietetic association, [2]Topics in clinical nutrition, [3]International journal of food sciences and nutrition, [4]Concology nursing forum, [5]Unpublished dissertation. Loma Linda University (Abstract only), [6]Journal of nutrition education and behavior.
[a]The health habits and history questionnaire (version 2.1, 1987, national cancer institute, bethesda, Md), [b]FFQ : Food frequency questionnaire

in more than one database ; therefore, these searches yielded only eight manuscripts that studied the research question of this paper.

A Meta Analysis strategy was first attempted in this study to examine the relationships between acculturation and dietary quality in Korean Americans. Unfortunately, significant methodological differences in the studies prevented conducting a Meta Analysis. No statistical analyses were possible, therefore only the direction of the relationship between dietary acculturation and dietary quality was examined.

Results

1. Current status of diet quality

A few studies reported nutrient intakes among Korean Americans (Cross et al. 2002 ; Kim et al. 2002 ; Lee et al. 2003b). As shown in table 2, results on percent energy from macronutrients among Korean Americans are remarkably similar across the studies in spite of regional and age differences. Although the percentages were within the ranges recommended by the Institute of Medicine (In press), diet profiles of Korean Americans are in transition from Korean diet profiles to American diet profiles. It should be noted that more energy was consumed in the form of fat and less in the form of carbohydrate, however, most fats consumed were unsaturated fats (Cross et al. 2002 ; Lee et al. 2003b).

Cross et al (2002) calculated the Health Eating Index scores for Korean Americans in their study. The Health Eating Index is a scoring system to globally evaluate diets based on food group consumption compared to the Food Guide Pyramid developed by the United State Department of Agriculture, and on selected nutrient consumptions compared to the Dietary Guideline for Americans (Kennedy et al. 1995). Diets scored higher than 80 are considered to be good. The average Healthy Eating Index score of Korean Americans' diets was 73, which indicated there was a slight need for improvements. Many articles (Cross et al. 2002 ; Kim et al. 2002 ; Lee et al. 2003b) identified high sodium intake to be a problematic area. Some other areas in need of improvement include calcium and fiber intake in both men and women and iron intake in women (Cross et al. 2002 ; Lee et al. 2003b).

2. Current status of dietary acculturation

Two studies (Kim et al. 2000 ; Lee et al. 1999a) reported that Korean Americans ate more "American" foods (e.g. low-fat milk, yogurt, or bread) as they adapted to American society, while their consumption of "Korean" foods decreased. Kang, Garey (2002) showed that the dietary changes might not be linearly associated with acculturation. For example, Korean food consumption might decrease during the initial stage of acculturation ; however Korean food consumption might return to the initial level of consumption or exceed it once Korean Americans are stabilized in their new surroundings. One study found no significant dietary changes by the length of residence in the U.S. (Gordon et al. 2000).

The incorporation of "American" foods happens predominantly during breakfast and lunch (Lee et al. 1999a). Korean Americans are likely to have American breakfast, American or Korean lunch, and Korean dinner, regardless of their acculturation status.

Acculturation is also related to dietary behaviors such as eating-out and choice of cuisine. More acculturated Korean Americans tended to eat out and snack more frequently, to rely on food prepared by others more, and to eat more diverse ethnic cuisines other than Korean (Kang, Garey 2002 ; Lee et al. 2003a ; Lee et al. 2002 ; Oh 2000 ; Park et al. 2003).

3. Relationships between dietary acculturation and the diet quality

Only two studies (Lee et al. 1999a ; Oh 2000) attempted to examine the relationships between dietary acculturation

Table 2. Energy from macronutrients in korean americans

% Energy from	DRIs[a]	NHANES[b]	KA Adolescents in CA[c] (n = 230)	KA in NJ/NY[d] (n = 69)	KA in NJ/NY[e] (n = 401)	Koreans in Korea[f] 1995
CHO	45 – 65	50	56	58	56	65
Protein	10 – 35	15	17	15	16	16
Fat	20 – 35	35	27	26	28	19

[a]Dietary Reference Intakes, 2000, [b]National health and nutrition examination survey, 2000, [c]Oh, 2000
[d]Kim et al. 2002, [e]Lee et al. 2003b, [f]Korean National Nutrition Survey

and diet quality. Lee et al(1999a) reported that diet quality did not seem to vary by acculturation status among adult(17 and older) Korean Americans living in the continental U.S. This study assessed diet quality by examining food group consumptions across acculturation status. Vegetable group consumption was higher among less acculturated individuals, while fruit group consumption was higher among more acculturated individuals. Other food group consumptions did not significantly differ by acculturation status. On the other hand, Oh(2000) reported lower acculturation was associated with higher Healthy Eating Index scores among Korean American adolescents living in the Los Angeles areas, indicating an inverse relationship between acculturation and dietary quality in this population.

Discussion

Korean Americans currently consume diets that are relatively balanced in terms of macronutrients, however Korean Americans will benefit by increasing consumption of calcium and fiber and decreasing consumption of sodium. Further trends of fat consumption among Korean Americans should be carefully monitored. Given that Korean Americans tend to consume more foods high in saturated fat and sodium(e.g. meat, processed foods) as they acculturate, diet quality may deteriorate with acculturation.

This critical review of the studies revealed several areas for consideration in future studies : 1) acculturation measures, 2) dietary measures, 3) possible factors affecting dietary acculturation, 4) health consequences of dietary acculturation, and 5) study design issues. Most of the studies cited here viewed acculturation as a unidimensional process rather than as a bidimensional process. The most frequently used acculturation measure was the length of residence in the U.S., which is a unidimensional acculturation measure. Korean Americans in the U.S. have a relatively short immigration history ; therefore the unidimensional model may be able to explain the current acculturation status of Korean Americans. The bidimensional model is more useful with groups of long immigration histories. However, acculturation measures based on the bidimensional model are recommended, especially with young immigrants or second generations(Lee et al. 2003). Since the bidimensional model is more comprehensive than the unidimensional model, one can collapse the acculturation measures based on the bidimensional model to one according to the unidimensional model, if data shows pertinent. However, converting from the unidimensional model to the bidimensional model is not possible. The popularity of the unidimensional acculturation measures, in part, stemmed from the absence of any bidimensional acculturation measures for Korean Americans(Salant, Lauderdale 2003). There are a few bidimensional acculturation scales that have been used with Korean Americans : the Lee's scale(Lee et al. 2003) and the modified ARSMA-II(Acculturation Rating Scale for Mexican Americans-II) for Asian Americans(Liem et al. 2000). However, critical evaluations on the various acculturation scales have not been done in Korean Americans or in any ethnic groups of Asian Americans.

Various dietary measures were used in the studies with Korean Americans. Food Frequency Questionnaires(FFQ) were most often used perhaps because of their relative ease in application and analysis. Many studies(Cross et al. 2002 ; Gordon et al. 2000 ; Kim et al. 2000 ; Lee et al. 1999a ; Oh 2000) used the modified versions from the previously existing FFQ such as the National Cancer Institute developed HHHQ or the Willett's FFQ, with limited validation efforts. Because the modified FFQs were not vigorously validated against other types of dietary assessment methods, nutrient consumption results from the modified FFQs should be taken with consideration. One FFQ was developed specifically for Korean Americans and validated against the 7-day diet record method(Kim et al. 2002). The developed FFQ produced acceptable correlation coefficients. However, the participants of the validation study were relatively new immigrants with an average length of residence in the U.S. of 10 years. More acculturated Korean Americans such as second generations were not included in the study sample. It appears that the Kim's FFQ can be used with less acculturated Korean Americans ; however, further validation studies may be needed for the use of this FFQ with more acculturated Korean Americans.

Other dietary measures used were 24-hour recalls and specific questions on dietary behaviors(e.g. "How often do you eat out?"). The 24-hour recall method has many advantages. One cannot only calculate nutrient consumptions of participants, but also obtain contextual information such as where "American" foods were incorporated and how many meals were consumed. These contextual data

are important in designing nutrition interventions. One of the disadvantages is difficulty with its application and analysis. Unless a large number of participants are involved, multiple-day 24-hour recalls would be needed to ensure adequate statistical power (Gibson 1990). Analysis of 24-hour recall data is much more time consuming than analysis of FFQ data. In addition to the length of time required, there is also the difficulty of creating food databases of diet analysis programs. Because Korean Americans consume "Korean" foods as well as "American" foods, diet analysis programs developed either in the US or in Korea do not have all the foods in their databases. Even if a certain "American" food exits in the database of a program developed in Korea, its portion size and nutrient values are different from the food consumed in the U.S. These details should be attended to in order to obtain accurate results.

Researchers have primarily studied food and, in lesser degree, nutrient consumptions, without considering what factors have affected dietary acculturation. That is, we have studied what takes place in dietary acculturation without paying much attention to why and how dietary acculturation progresses. Lee et al (1999b) reported that "preparing meal themselves," "concerns about health," and "willingness to try other ethnic foods" were important in American food consumption frequency. They also found that Korean food availability was related to the number of Korean foods regularly consumed, but not to the frequency of Korean food consumption. Others (Gordon et al. 2000 ; Kang, Garey 2002 ; Park et al. 2003) examined variables that can be positioned as factors affecting dietary acculturation, however they either did not study them in relation to food and nutrient consumption or have not yet published the results. Understanding why and how dietary acculturation occurs is invaluable because of their implications on health and nutrition interventions.

While studying dietary acculturation itself is interesting and important, examining the health implications of dietary acculturation is imperative. The studies with various ethnic groups have reported that acculturation was positively related to the prevalence of obesity, diabetes, heart diseases, and cancer (Hazuda et al. 1988 ; Huang et al. 1996 ; Popkin, Udry 1998). These positive relationships between acculturation and chronic diseases may have become realized in Korean Americans, but most studies with Korean Americans did not examine the relationships. The positive relationship between acculturation and body weight in Korean American men was reported (Lee et al. 2000). Future studies should try to extend their research scope, so that we can prevent undesirable health impacts from dietary acculturation through health and nutrition intervention.

Lastly, all studies reported in this paper used a cross-sectional study design. Considering that acculturation is a process and that the cross-sectional study design cannot provide causal inferences (Rothman 1986), longitudinal studies should be conducted. The ideal study would start the data collection before new immigrants leave Korea and follow them through years in their new country. Additionally, researchers should try to include more young Korean Americans who were either born in the U.S. or came to the U.S. during the early part of their lives. Only one study (Oh 2000) focused on this segment of the population. Inclusion of young Korean Americans is important because they are different from their parents, the first generation immigrants. They are more comfortable in American culture, speak fluent English, and have different ethnic identities (Hurh 1998 ; Lee et al. 2003). Therefore, young Korean Americans may show relationships between acculturation and food and nutrient consumption of a different nature or of a different degree.

In summary, compared to other Asian ethnic groups in the U.S., a good number of studies have been carried out to examine food and nutrient consumption among Korean Americans. The studies reported that Korean Americans eat differently by their acculturation status and whether dietary acculturation is positively related to diet quality is inconclusive. The studies recommended that appropriate health and nutrition interventions are needed to improve the current status of diet quality and to prevent possible deterioration in diet quality.

Translocation of people will continue as globalization sweeps through the world. This presents unique opportunities to study how diets are related to environments and what health consequences the dietary changes will produce. These unique opportunities require collaborations among researchers in many nations. For example, the difficulty with food databases mentioned above can be solved only by collaboration between researchers working with Korean Americans and Korean researchers in Korea. Researchers in the countries from which immigrants originally came can be great resources for researchers in the new country of

the immigrants. Since the new countries tend to be more ethnically diverse, few nutrition-related resources are available for a particular ethnic group. Many ethnic nutrition network groups in the U.S., such as the Korean American Dietetic Association, have tried to overcome the lack of resources by building working relationships with nutrition professionals in their relevant countries. Through the collaborations, community nutritionists in different nations can contribute to carving better health profiles for the people.

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