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Assessment of Dietary Intakes of Filipino-Americans: Implications for Food Frequency Questionnaire Design

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INTRODUCTION

There are over three million Filipino-Americans living in the U.S., and Filipino-Americans are the fastest growing Asian-American ethnic group, comprising the second largest Asian population (after the Chinese) in the U.S (<http://factfinder.census.gov/servlet/>; <http://www.state.gov/r/pa/ei/bgn/2794.htm>). At 3%, Filipino-Americans are the largest Asian subgroup in the most populated state of California and the second largest immigrant group in the U.S., after Mexicans.¹ Risk for several common chronic diseases, including obesity, hypertension and diabetes of Filipino-Americans²⁻⁶ may be linked to dietary intake. Change in dietary practices due to acculturation is one of the hypothesized causes of changes in health outcomes associated with immigration to the U.S.⁷⁻⁸

As Filipino immigrants migrate from a country of food scarcity to a nation of food abundance, changes in food choices and intakes, combined with food preferences and some food preparation practices, rapidly result in increased obesity, hypertension, and diabetes.⁹⁻¹¹ Culturally sensitive measures of dietary intakes¹²⁻¹³ among Filipino-Americans are thus a necessary first step in examining the relationship between intake and risk for health problems in this minority population. Yet Filipino-Americans have received relatively little attention in the research literature evaluating the link between dietary intake and health

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outcomes, and validated measurement instruments to assess dietary intakes among Filipino-Americans are currently unavailable. Perceived as well-educated, upwardly-mobile, self-sufficient, and hardworking, the health issues of Filipino-Americans may be overlooked by health policy makers.³ Their invisibility is reflected in the paucity of published research focused on the Filipino-Americans population compared to other Asian-American groups.¹⁴⁻¹⁵

Purpose of the Study

The purpose of this study was to: (1) describe food consumption practices among Filipino-American adults with a wide range of acculturation, (2) describe how Filipino-Americans respond to the Fred Hutchinson Food Frequency Questionnaire (FHFFQ) as a function of acculturation and gender, and (3) based on these data, suggest modifications of the FFQ to improve dietary assessment among Filipino-Americans. Although the study is exploratory in nature, based on qualitative data and a small, nonrepresentative sample of Filipino-Americans, it is the first of its kind to examine dietary intakes of Filipino-Americans from the viewpoint of food frequency questionnaire development.

METHODS

Participants

Adult male and female Filipino-American adults aged 30 to 60 years were recruited using flyers posted in locations frequented by Filipino-Americans (churches, healthcare and community centers, restaurants, and specialty food stores) from the general community of National City, in which the largest proportion of Filipino-Americans reside in San Diego County, California. Adults aged 30 to 60 years were targeted because they were the age range most likely to display a range of acculturation levels and to be at risk for chronic disease related to dietary intake.

Procedures

Prior to data collection, the institutional review boards at the University of California, San Diego (UCSD), and San Diego State University approved the study, and all study participants provided written, signed consent. Potential participants were contacted by phone to screen for study participation, at which time acculturation level was determined.¹⁶ Acculturation was determined using the Short Acculturation Scale for Filipino-Americans,¹⁶ which examines social customs and preference for using English versus Philippine languages in various settings. Participants representing a wide range of acculturation level were enrolled. Participants were classified into lower (n = 18) versus higher (n = 17) acculturation groups using a cutpoint set at the midpoint of the 5-point rating scale.

Participants were mailed the Fred Hutchinson Food Frequency Questionnaire along with a 29-item survey of participant's reactions to the FFQ. After receiving their completed FFQ, participants participated in a focus group, during which time they also completed an ethnographic questionnaire concerning their dietary intake (described below). Participants were compensated for their time and effort and received a nutrient analysis report based on their FFQ.

Food Frequency Questionnaire

The General Population-English Language Fred Hutchinson Food Frequency Questionnaire was used with a one-month reference period (Fred Hutchinson Cancer Research Center, Seattle, WA; sample questionnaires are available at http://www.fhcr.org/science/shared_resources/nutrition/ffq/sampleffq.html). The primary nutrient database for this FFQ is the University of Minnesota Nutrition Coordinating Center

(NCC) nutrient database (NDS-R 2005), Minneapolis, MN¹⁷ and the algorithms for analysis are published elsewhere.¹⁸

Focus Group

Focus group procedures have been described previously.²¹⁻²² Four focus groups were completed; one focus group was conducted for each gender by high vs. low acculturation groups. The focus group examined food consumption practices and participant problems with the FFQ. The focus group session usually lasted about an hour and a half, was audio-recorded, and included light snacks.

Ethnographic Questionnaire

Consistent with dietary ethnography methodology,²¹⁻²² participants were asked via questionnaire during the focus group to name three foods that they 1) “commonly ate,” 2) considered prototypical Filipino foods, and 3) associated with Filipino-American celebrations; the same food could be listed multiple times.

FFQ Survey

Participants rated the FFQ on several dimensions based on previous research using the same FFQ in a multi-ethnic sample.¹⁹⁻²⁰ Respondents were asked how difficult it was to remember how often and how much food was eaten (very difficult, somewhat difficult, somewhat easy, and very easy), to agree or disagree with statements about specific aspects of the questionnaire, and to rate the questionnaire overall (very poor, poor, good, very good).

Data Analysis

The audio recordings and questionnaires of focus groups were content analyzed to summarize the food intake patterns of study participants. Percent agreement on FFQ ratings was calculated by total group and by gender and acculturation groups. Significant differences in percent endorsement between gender and acculturation groups were determined by Chi Square analysis. All analyses were conducted using Statistical Package for Social Sciences (SPSS) Version 14.0 (SPSS Inc., Chicago, 2004). An alpha level of 0.05 was used for all analysis; results that demonstrated a trend toward significance ($0.05 < p < 0.10$) were also reported due to the exploratory nature and small sample size of the study.

RESULTS

Participants

Of the 35 Filipino-Americans recruited from the general community of San Diego County, 14 were men (6 lower- and 8 higher-acculturated) and 21 were women (12 lower- and 9 higher-acculturated).²³ Seventy-four percent of the sample was born in the Philippines. Age ranged from 30 to 60 years, with an average age of 45.4 years (standard deviation, SD = 8.9). The majority of participants (83%) had more than 12 years of education. According to Chi Square analysis, there was no significant relationship between gender and acculturation ($p = 0.41$); however, as expected, older participants (> 45 years) were more often lower-acculturated ($p = 0.01$).

Food Consumption Practices

Focus group discussion revealed a basic daily diet to be one that included rice, fish or meat, vegetables, and fruit with freshness of ingredients being of paramount importance. Steamed, white rice was reported to be a central part of the daily diet, often being eaten at breakfast, lunch, and dinner. Rice was an accompaniment to both sweet and savory foods, and large amounts were made at one time and then made available at any time of day. Meals were

described as occurring as many as five or six times a day, including a heavy breakfast (*almusal*) of rice and meat, a small snack (*merienda*) before lunch, lunch (*tanghalian*), another *merienda* before dinner, dinner (*hapunan*), which involved communal food preparation and time to visit with family, and an after-dinner snack, including fruit or dessert (*panghimagas*).

Communal eating was described as an essential element in the social fabric of Filipino life. Celebrations and festivals were a common part of the Filipino-American lifestyle, and food was described as a major component of social gatherings. Certain ceremonial foods were identified as typical parts of celebrations (such as *lechón*, or roasted pig), as well as symbolic foods (such as *pansit* for long life). Whether higher- or lower-aculturated, participants described eating many of the same traditional Filipino foods. Participants reported that Filipino foods traditionally combined sweet, sour, bitter, and salty tastes.

According to focus group data, commonly eaten foods (but not necessarily traditional Filipino foods) included steamed white rice, fruits (bananas, guavas, mangoes, apples, and oranges), fish, vegetables, eggs, meat, and mixed dishes (such as chicken *adobo*—a slow-cooked, highly seasoned traditional Filipino meat dish) (see Table 1). Prototypical Filipino foods were identified as *adobo*, *pansit* (noodles cooked with shrimp, fish, meat, or vegetables), *lechón* (whole, roasted suckling pig), *sinigang* (a stew of meat, fish, or seafood with vegetables, including taro, in a sour broth), *pan de sal* (bread rolls made with salt), *tinola* (chicken cooked in a spicy broth with papaya or chayote), fish (such as tilapia), and *pinakbet* (a stir-fry of bittermelon and vegetables with fish or fish paste). Foods associated with Filipino celebrations included *adobo*, *pansit*, *lechón*, *lumpia* (meat, vegetables, or fruit wrapped in thin egg roll wrapper that is typically fried), *apritada* (chicken or pork stew with tomato sauce and vegetables), *kilawin* (raw, cubed fish or meat, typically goat, marinated in vinegar and spices and served cold with beer), barbecued meat, desserts (such as *kakanins*, rice cakes eaten as snacks; *puto*, a glutinous rice cake; *leche flan*, a caramel custard made with milk and eggs; *bibingka*, a rice cake topped with milk cheese; *turon*, a deep-fried banana fritter cooked with brown sugar and jackfruit), *pinakbet*, *pinapaitan* (bitter soup made with meat and bile), *dinuguan* (stew of pig blood, entrails, and meat), *inihaw* (grilled) fish, and fried organ meats.

FFQ Ratings and Group Differences in FFQ Ratings

Table 2 presents participants' ratings of the FFQ, in order from highest to lowest percent endorsement in the total group, and statistical tests for differences between gender and acculturation groups. Overall, men were more likely to report having more problems with the FFQ than women, as were lower- as compared to higher-aculturated participants.

Most participants thought that it was easy to recall how often food was eaten (61%) and the amount of food that was eaten (77%) although less so for the lower-aculturated ($p < 0.05$). Many thought the questionnaire was too long (45%; especially men, $p < 0.05$), repetitive (48%, with a trend for significance among the lower-aculturated, $p < 0.10$), that it was difficult to use ounces to try to describe the amount of food eaten (55%; especially among the lower-aculturated, $p < 0.01$), and that it was difficult to distinguish between eating a food never or once per month (43%, especially for the higher-aculturated and men, $p < 0.05$). Men and the lower-aculturated also found it difficult to use cups to determine how much they ate ($p < 0.05$). It was difficult for the lower-aculturated to determine the amount they ate based on the medium size reference category ($p < 0.05$). The higher-aculturated were frustrated that the foods they reported on the FFQ were atypical ($p < 0.05$). Results that demonstrated a trend toward significance ($p < 0.10$) suggested that men had frustration recalling everything they ate during the past month and that they felt bad reporting how

much they ate. Men also thought that the use of pictures would be helpful to show portion sizes or types of foods ($p < 0.01$).

Of concern was that a large percent of participants (46%) that based their answers not only what they personally ate but also what their family ate. Many (45%) also reported that they sometimes did not tell the truth about how much they ate of some foods or had to guess to in order to answer a question (53%). About three-quarters of respondents reported that the questionnaire did not ask about foods that are commonly eaten by Filipino-American culture. Despite these observations, 97% of participants gave the questionnaire an overall rating of “good” or “very good.”

DISCUSSION

Food Consumption Patterns

The present investigation provides a rich source of data about Filipino-American food consumption patterns that may help to understand diet-disease relations. Our findings on basic food consumption patterns are largely consistent with those previously identified for Filipino-Americans²⁴⁻²⁶ of rice, fish or meat, vegetables, and fruit. The present research observed the importance of traditional prepared foods in the daily life of Filipino-Americans, such as *adobo*, *lumpia*, and *pansit*; this finding has been previously documented.²⁷⁻²⁸ The present investigation identified a number of food consumption practices among Filipino-Americans which may be used to develop a tailored FFQ. For example, commonly eaten Filipino foods that also contribute significantly to nutrient intakes might be added to a revised FFQ by adding foods to existing line items and by adding new line items. For example, *pan de sal* may be added to the existing FFQ line item measuring “white breads, including bagels, rolls, and English muffins” while *lechón* might be added to “beef, pork, ham, and lamb.” Traditional mixed foods, such as *adobo*, *lumpia*, and *pansit*, and other foods (i.e., bitter melon) might merit their own line item, based on their contribution to overall nutrient intakes.

Acknowledgement of food consumption behaviors of Filipino-Americans might also be included on a revised FFQ. These could include statements in front page instructions about eating five or six times a day, and including the Filipino words for meals and snacks such as *almusal*, *merienda*, and *hapunan*. Acknowledging in the questionnaire’s instructions the prevalence and amount of white rice consumption and the importance of recognizing the influence of social occasions and family when eating and preparing foods in the Filipino-American culture might serve to enhance recall of food intake experiences. Inclusion of traditional Filipino foods is expected to improve face validity. Having face validity has been shown to improve motivation and cooperation of the respondent;²⁹⁻³⁰ such cooperation is important when completing a lengthy and cognitively complex measure such as an FFQ.

FFQ Ratings

About three-quarters of our Filipino-American study participants reported that the FFQ did not include foods that were commonly eaten in their Filipino-American culture. Rather high proportions of participants had to guess, based their answers on what their family ate, and that they did not always tell the truth. Each of these factors would affect the accuracy or validity of the FFQ results among Filipino-Americans. Other measurement factors were related to the motivation respondents have in completing the FFQ; for example, a large proportion said the FFQ was repetitive, that it was too long, and that it made them feel bad when they thought about how much they ate.

In revised instructions on the FFQ, Filipino-American respondents should be encouraged to base their answers solely on what they ate, not what their family ate, to be as accurate as

possible, and to acknowledge that sometimes all people eat too much or eat foods that are unhealthy and that this is normal. In previous research, similar instructions were reported by a sample of multi-ethnic participants to be significantly more helpful than other aspects of a revised questionnaire.¹⁹ General instructions can be provided on the first page of a revised FFQ which addresses issues regarding length, repetitiveness, and to acknowledge feelings of guilt they may have while completing the questionnaire. While such instructions would not alter the questionnaire per se, it is hoped that acknowledging these aspects of the questionnaire and justifying the length or repetition of certain questions may improve their motivation to complete the FFQ.

Strengths and Limitations

A strength of this study is that it focuses on Filipino-Americans, an understudied but important group whose common health problems are associated with dietary intake. A limitation of the present investigation is that because it was a pilot study, it was based on small numbers and used a nonrepresentative sample of Filipino-Americans. However, this study attempted to generate hypotheses regarding recall strategies among Filipino-Americans; these hypotheses may be investigated in the future in larger, more representative samples.

IMPLICATIONS FOR RESEARCH AND PRACTICE

If a revised food frequency questionnaire is developed for Filipino-Americans, it is likely, given our previous findings,¹⁹ to result in increased and thus more accurate recall of food intake. A 2003 working group of the National Health Lung and Blood Institute (<http://www.nhlbi.nih.gov/meetings/workshops/hispanic.htm>) recommended that to improve measurement of dietary intake among Latinos, measures of diet should be tailored to Latino food practices and that such measures should be developed with respect to differences in acculturation. A similar modularization process can be recommended for dietary intake research on Filipino-Americans. If measurement is improved by including traditional foods and improved directions, more accurate diet-disease relations are likely to be uncovered.

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Table 1
Commonly Eaten Foods, Foods Associated with Celebrations, and Prototypical Filipino-American Foods as Assessed by Focus Group (N = 35)

Foods Commonly Eaten
White rice (mostly steamed, but also fried with garlic)
Fruits (bananas, mangoes, apples, oranges)
Fish
Vegetables
Eggs
Meats (beef, chicken)
Mixed dishes (such as chicken <i>adobo</i>)
Prototypical Filipino-American Foods
<i>Adobo</i>
<i>Pansit</i>
<i>Lechón</i>
<i>Sinigang</i>
<i>Pan de sal</i>
<i>Tinola</i>
<i>Pinakbet</i>
Fish (such as tilapia)
Foods Associated with Celebrations
<i>Adobo</i>
<i>Pansit</i>
<i>Lechón</i>
<i>Lumpia</i>
<i>Apritada</i>
<i>Kilawin</i>
Barbequed meats
Desserts (<i>kakanins</i> , <i>puto</i> , <i>leche flan</i> , <i>bibingka</i> , <i>turón</i> , fruit salad, assorted fruits)
<i>Pinakbet</i>
<i>Pinapaitan</i>
<i>Dinuguan</i>
Fried or <i>inihaw</i> fish
Fried organ meats
Beer-gin

Note. See the text for a definition of the italicized Filipino-American foods.

Table 2
Percent Agreement on FFQ Ratings and Differences by Gender and Acculturation (N = 35)

	Percent (%) Agree	Gender and Acculturation Group Differences	
	Total Sample	Men ^a	Higher Acculturated ^b
Overall the rating of the food frequency questionnaire (FFQ) was good or very good	97	92	100
It was easy to remember how <i>much</i> food was eaten	77	83	94*
The FFQ did not ask about foods that are commonly eaten in my Filipino-American culture	76	82	87
It would be easier to recall if the foods were broken into breakfast, lunch, and dinner	71	82	62
It was easy to remember how <i>often</i> food was eaten	61	50	75
It would be helpful to have pictures to show amounts or types of foods	56	90**	46
It was difficult to determine what I ate in terms of ounces	55	64	23**
I sometimes had to guess in order to answer a question	53	67	56
It would be helpful to include a fast food section	50	60	64
The FFQ was repetitive	48	64	31+
I based my answers on what both I and my family ate	46	64	57
It would be helpful to include more vegetarian food options	46	56	44
I sometimes did not tell the truth about how much of some foods I ate--such as sweets or snacks	45	46	40
The FFQ was too long	45	70*	31
It was difficult to distinguish between never vs. less than once per month frequency	43	70*	59*
My responses made me think about how much of the same foods I ate and made me feel bad	41	64+	27+
It was difficult to determine how often I ate foods listed in the same question (i.e. beef, pork, ham, and lamb)	32	25	21
I was unfamiliar with some of the foods listed on the food questionnaire	30	31	19
I don't know how to determine what I ate in terms of cups	30	50*	8*
It was frustrating that the foods I ate during the last month were atypical for me	28	36	44*
I wanted to write on the questionnaire foods that I eat or make comments about my answers on the questionnaire	27	30	40+
I couldn't determine whether I ate small, medium, or large servings using the medium serving size reference category	27	33	7*
It was frustrating to try to remember everything I ate for the past month	26	46+	19
The FFQ didn't ask about foods I often eat	23	33	20
The amounts were too small	23	23	27
The instructions were not clear	7	10	0
I used a calendar when I filled out the questionnaire to help recall what I ate during the past month	7	10	13
It was hard to fill in the bubbles	3	9	0
I use the metric system to measure when I cook	0	--	--

Note. Percents are given in order from highest to lowest agreement in the total group. Significant differences are based on proportion endorsement between men vs. women and lower vs. higher acculturated study participants

⁺ p < 0.10

*
 $p < 0.05$

**
 $p < 0.01$.

^aProportion endorsement for each statement as reported by men.

^bProportion endorsement for each statement as reported by higher-acculturated participants.