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PATTERNS OF COMMODITY FOOD USE AMONG AMERICAN INDIANS

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ABSTRACT

Objectives: To better understand risks for obesity and diabetes among American Indians.

Methods: Adults from tribes across the country surveyed to explore commodity food use patterns and food choice.

Results: Respondents reported second and third generation commodity food use. Current commodity users stated preferences for canned and packaged meals and were more likely to participate in other federal food programs.

Conclusions: Low-income, nutritionally stressed families relying on federal food programs may be at increased risk of obesity and diet-related chronic conditions due to long-term use of foods that are high in fat and calories and low in fiber.

Key words: American Indian, commodity foods, food preference

INTRODUCTION

Over the past several decades, American Indian families have made voluntary and involuntary changes to their diets. One of the major changes was the widespread availability and use of commodity foods. The impact of those changes is highly evident today with increasing obesity and related chronic diseases (Curran et al., 2005; Welty, 1991). Complications from inadequate diets and poor eating habits are likely to persist for life and therefore carry the associated burden of persistent chronic illness and opportunity loss costs.

In a collaborative effort with the Department of Agriculture (USDA) Economic Research Services (ERS), the University of Nevada Las Vegas (UNLV) American Indian Research and Education Center (AIREC) endeavoured to provide both descriptive and analytic profiles of current use of commodities, including how intergenerational and individual patterns of commodity food use may affect food choice and food preferences. American Indians are among the most economically vulnerable and most nutritionally at-risk population groups targeted by USDA's food assistance programs.

Compared to other US populations, American Indians are more likely to be poor, unemployed, experience high levels of food insecurity, and suffer from debilitating chronic diseases associated with persistently poor diets. Obesity rates for American Indians are more than double those for White Americans and type-2 diabetes rates are amongst the highest in the world. Those living on or near reservations are poorer than American Indians living elsewhere and are therefore even less likely to be able to meet their nutritional needs without federal assistance. Yet, little is known about the use, delivery, and effectiveness of food assistance programs serving American Indians on or near reservations.

In particular, the relationship between obesity, food security, and human capital among American Indian populations has not been adequately studied. The unique history, conditions, and circumstances of American Indians just in the past two generations, have resulted in major changes in diet, an epidemic of obesity, a complete reversal in food security, and a decline in human capital as measured by intergenerational health-related knowledge, skills, and abilities.

Federally funded programs such as food stamps, school lunch, WIC (Special Supplemental Nutrition Program for Women, Infants, and Children), and Head Start help low-income people procure food needed for nutritional wellbeing. Through these federally subsidized food assistance programs, the USDA seeks to improve dietary health on American Indian reservations, providing supplemental food and nutrition education to low-income, geographically isolated residents.

Using available literature on commodity food use and American Indians, a survey instrument was designed to collect information regarding American Indian perspectives on commodity food use. This instrument included both closed and open-ended questions that inquired about: 1) demographic information; 2) fresh vs. packaged food choices; 3) multigenerational commodity food use; 4) frequency of commodity food use across meals; and

5) participation in federally funded programs such as foods stamps, WIC, school lunch program, and Head Start food distribution.

BACKGROUND AND SIGNIFICANCE

Compared to other US populations, American Indians are more likely to be poor, unemployed, and experience high levels of food insecurity (US Department of Agriculture, 2008). Despite 60 years of participation in the USDA's food assistance programs, American Indians suffer high rates of debilitating chronic diseases associated with persistently poor diets including obesity and diabetes (Urban Institute, 2008; US Department of Health and Human Services, 2008; Welty, 1991). For low-income families relying on federal food programs, weight gain along with a sedentary lifestyle increase the risk of obesity and diet-related chronic conditions; commodity foods provided through some programs are higher in fat and calories and lower in fiber (Dillinger et al., 1999; Welty, 1991). The link between food stamp usage, weight, and nutrition has to do with poor food choices and the tendency to use and purchase fast foods and processed foods with long shelf lives (Dietz, 1995; Drewnowski and Specter, 2004; Nielsen and Popkin, 2003; Oliver, 2006; Weinsier et al., 2000).

The Office of Minority Health (2008) reports that rural locations and low income are persistent barriers to health care for American Indians. Leading chronic conditions for this group include heart and liver disease, cancer, and diabetes. Diagnosis of diabetes for American Indians is twice that of Caucasians (US Department of Health and Human Services, 2008). In fact, the Pima tribe of Arizona reports one of the highest rates of diabetes worldwide. Another health concern is obesity, which is a major risk factor for health disease, type 2 diabetes, high blood pressure, stroke, and select cancers. The OMH report (2008) noted that greater BMI values among American Indians were significantly correlated with type 2 diabetes. Diabetes among American Indian youth (ages 15–19) has increased 106% between 1990 and 2001 (Indian Health Services, 2002).

Much of the research on obesity among American Indians, particularly among children, is focused on individual eating preferences and habits. However, American Indian children eat the foods their families prepare and provide. Becker (2006) states that human capital is strongly influenced by families. Parents' preferences and practices can affect educational attainment, marital stability, propensity to smoke, and many other dimensions of their children's lives including food choice. Sherraden (1991) adds that

consideration must also be given to the aspect of *cultural capital*, the knowing and practice of values and behaviours of a particular group, in this case, American Indians. In the past 40 years American Indian families have made voluntary and involuntary changes to their diets. One of the major changes was the widespread availability and use of commodity foods. The impact of those changes is highly evident today.

Welty (1991) notes that, as recently as 1967, malnutrition was a serious problem and many American Indian children lagged behind their non-Indian peers in height and weight. Efforts to feed the hungry in America in the 1960s brought additional food supplements, in particular commodities (canned meats, soups, and juices; pasta; cereal; rice; cheese; peanut butter; corn syrup; flour; dry, evaporated milk; and vegetable oil), to American Indian families. These food programs created food security where it didn't exist with foods that were higher in fat and calories and lower in fiber than American Indian traditional foods. Within a generation, the problem of malnutrition was replaced by the problem of obesity. The use of the term "*Comod-Bod*" in tribal communities captured the essence of the changes that occurred. The addition of commodities to American Indian diets was part of a group of changes that together have influenced current health problems.

Another critical change was the decline in farming and ranching. Downing (1985) describes the decline in American Indian farming in the past 50 years, from a high of 68% in 1940 to less than 6% in 1980. The combination of marginally productive farm and range lands and the rising costs of farming made the availability of food subsidies an important consideration. The decline in farming and other traditional activities have also led to increased sedentary behaviour and less physical activity, creating a high risk for obesity and related diseases.

As noted above, much of the recent research focuses on individual choice without considering the context within which food choice occurs. According to Oliver (2006), the link between food stamp usage, weight, and nutrition has to do with poor food choices and the tendency to use and purchase fast foods and processed foods with long shelf lives. However, he notes that the relatively high calorie to dollar ratio of many processed foods makes them a relative bargain for people on limited food budgets.

The goal for nutritionally stressed families is to get as many calories as possible from limited resources rather than strive for more balanced nutrition. It is hard to match the high calories per dollar from foods such as potato chips to the calories per dollar for green vegetables. Factoring in limita-

tions of facilities for storing and preparing fresher foods, it is clear that for many poor families highly processed foods are logical options.

METHODS

The objectives of this project were to describe historical and current use of commodities, how patterns of commodity food use affects food choice and food preferences, and attitudinal and behavioural implications for health and food subsidy policies for American Indian populations. The overarching goal was to identify ways commodity food may help shape food choice and diet quality among American Indian populations and identify possible strategies for a large-scale study. Additional areas of inquiry included:

- How are commodity foods replacing or enhancing food choices?
- How has the intergenerational use of commodity foods affected individual choice and community food trends?
- What is the consumption rate of commodity foods in relationship to purchased foods and foods obtained from traditional ways (hunting and gathering)?

Using available literature on commodity food use and American Indians, a survey instrument was designed to collect information regarding American Indian perspectives on commodity food use. A convenience sample of 301 American Indian adult respondents (ages 18–78 years) was surveyed while attending a national American Indian conference.

The survey included both closed and open-ended questions that inquired about:

- Demographic information
- Fresh vs. packaged food choices
- Multigenerational commodity food use
- Frequency of commodity food use across meals
- Participation in federally funded programs such as foods stamps, WIC, school lunch program, and Head Start food distribution

In addition to descriptive statistics and Pearson's chi-square (χ^2) test, a Commodity Use Index was created from 7 survey items:

- Did you eat commodity foods while growing up?
- How often used commodity foods in past 5 years?
- How often commodities used for 1) breakfast; 2) lunch; 3) dinner; 4) snacks?
- If you used commodity foods in past 5 years, how much of your meal included commodities?

The index was reliable with Cronbach's alpha of .88. The index range was 0–27, with a mean of 12.03 (s.d.=5.75).

RESULTS

Participants ranged in age from 18–78 years, with about 36% between 18–30 years of age and 34% aged 31–45 years. Nearly three quarters (74%) of respondents had children residing in their household. Almost half of respondents were from tribes in the Great Plains region of the US. About 30% were from tribes in the Southwest, 15% from tribes in the Midwest, and 4% from tribes in the Northwest. Our findings show that multigenerational use of commodities is the norm among sample participants, with 90% of respondents indicating they had grandparents and/or parents who used commodity foods while growing up.

Descriptive results reveal that half the sample (49.5%) has used commodity foods in the past 5 years. Of current commodity users: 53% used these products for breakfast; 59% used commodities for lunch; 63% used commodities for dinner; 47% used commodities for snacks. The consumption rate of commodity or purchased foods in relationship to foods obtained from traditional ways indicate that most meals consisted of commodity or purchased foods rather than hunted, fished, gathered, or grown foods. However, the sample did report the presence of these foods for a proportion of meals.

MULTIGENERATIONAL COMMODITY FOOD USE

Findings from our study show significant commodity use differences between respondents with grandparents or parents who grew up with commodities and those who did not ($\chi^2=18.22$; $p<.01$ and $\chi^2=16.87$; $p<.01$, respectively). Respondents with commodity-using grandparents or parents were about 4 times more likely to have used commodities in the past 5 years. There were also significant differences for current commodity use and whether respondent grew up using these products ($\chi^2=16.86$; $p<.01$). American Indians using commodities growing up were 3 times more likely to report using these products in the past 5 years.

There were no significant differences between grandparent use of commodities and current use of commodities during meals. There were, however, significant differences between parent and personal use of commodities and current use of commodities during meals ($\chi^2=4.99$; $p<.05$ and $\chi^2=8.34$; $p<.01$, respectively). Respondents were 1.5 times more likely to use com-

modities for meals if they or their parents used them growing up. There were no significant differences for multigenerational use of commodities and use of purchased (grocery store) products during meals. Likewise, no significant differences for multigenerational use of commodities and use of hunted, fished, gathered, or grown products during meals were found.

CURRENT COMMODITY USE AND FOOD PREFERENCE

Significant differences were found between current commodity use (past 5 years) and preferences for canned fruit ($\chi^2=6.20$; $p<.05$), canned meat ($\chi^2=9.71$; $p<.01$), and box meals ($\chi^2=6.66$; $p<.05$). Current commodity users were more likely to purchase canned fruits (93%), canned meats (62%), and boxed meals (74%) than those who never/rarely use commodities (84%, 44%, and 59%, respectively). There were no significant differences between current commodity use (past 5 years) and purchase of fresh fruit, fresh meat, sweets, carbohydrates, processed cheese, dairy, snacks, sweet beverages, or fruit juices.

REGIONAL DIFFERENCES FOR COMMODITY FOOD USE

Our research findings show significant differences between region and current use of commodities ($\chi^2=31.53$; $p<.01$). American Indians from the Plains (67%) were more likely to report commodity use in past 5 years than those from Midwest (41%), Northwest (42%), or Southwest (29%). Southwest Indians (71%) were more likely to report no/rare use of commodities than those from Midwest (59%), Northwest (58%), or Plains (33%).

COMMODITY USE INDEX

Significant differences were found between region and the Commodity Use Index ($F=9.16$; $p<.01$). Plains Indians scored significantly higher on the index than Southwest Indians. Mean score for former was 13.76 (s.d.=5.70) and 9.28 (s.d.=5.26) for the latter. There was a statistically significant mean difference between those participating in federally funded programs and those who do not for composite commodity use ($t=5.58$; $p<.01$). Respondents who use these programs had higher average scores (mean=14.34; s.d.=5.63) than those not using them (mean=10.29; s.d.=5.22).

PARTICIPATION IN FEDERALLY FUNDED FOOD ASSISTANCE PROGRAMS

Among participants in this study, 23% indicated that in addition to commodities, they participated in food stamp programs, 23% in school lunch

programs, 16% in WIC, and 2% in Headstart programs. There were significant differences between region and participation in federally funded programs ($\chi^2=12.81$; $p<.01$). Plains Indians (52%) were more likely than those from Midwest (39%), Northwest (33%), or Southwest (29%) to report using food stamps, WIC, school lunch, or Head Start.

DISCUSSION

Findings from this study suggest several important issues for consideration. First, with American Indian populations, federal food programs may not be the short-term supplement they were designed to be. Among participants in this study and anecdotally among other American Indian groups, a significant number of people currently use commodity foods, ate commodities foods while growing up, and have parents, and even grandparents, who were raised on commodity foods. Further, those who use commodity foods are also more likely to participate in other food supplement programs such as food stamps and WIC. Second, rather than supplementing or complementing other foods in the daily diet, commodities are a mainstay of most meals. Among many of our respondents, commodities are part of every meal, every day. Although occasionally supplemented with other types of foods, for many Indian people, commodities make up their primary diet.

Our findings also indicate that regular and continued use of commodity food items over the life course may influence food preference, supporting the findings of Dillinger et al. (1999) that parental preferences and practices can strongly influence children's behaviours, including diet/food choices. Our results showed some regional differences for participation in federally subsidized food programs and for current commodity use. Plains Indians were more likely to report using food stamps, school lunch, WIC, and Head Start programs than Midwest, Northwest, or Southwest Indians. Likewise, Plains Indians report greater current commodity food use, using both single and composite measures, than other regions. Since commodity food use has been associated with obesity (Welty, 1991; White et al., 2006), some American Indian populations may be at even higher risk for obesity and diet-related chronic conditions due to higher levels of participation in federal food subsidy programs.

With increasing rates of obesity-related diseases such as diabetes among American Indians there has been increased attention to understanding the impact of rapid changes in diet and nutrition in this population. One suggestion for improving health lifestyles and diets among American Indians is

supplying more traditional foods such as bison and other wild game instead of beef and fresh fruits and vegetables instead of canned produce (Acton et al., 1993). This could be done, in part, by donating funds rather than food items at reservation stores and food banks so that fresh meats and produce can be ordered. Similarly, nutrition education programs could focus on reviving community knowledge about harvesting and preparing traditional, locally available foods.

This preliminary study found an association between multiple generations of commodity food users, food use, and food preference. It is evident that longer term use of commodity foods affects food choice and food preferences, with regional differences worth noting. However, more information is needed on the nature of commodity food use among intergenerational users and how these foods affect the diets and the health of American Indians.

LIMITATIONS

This study relied on a convenience sample, therefore respondents may not accurately reflect the general reservation-based population. Because the survey was conducted in a conference setting, most of our survey participants may have been better educated on health issues and possibly better employed, than other members of their communities. Even so, a majority indicated commodity food use at some point in their lives.

Several key variables related to income and reservation life may mediate these findings. Multiple generations living in poverty likely translate into multiple generations using commodity foods. Further, reservation areas without electricity, refrigeration, and/or cooking facilities or grocery stores may further promote the use of highly processed foods with long shelf lives and certain cooking styles. Finally, other research methods, including longitudinal/panel and macro approaches, would be beneficial and insightful in investigating correlations between commodity food use and diabetes and obesity rates. The latter methodology would be useful for demonstrating community level links between commodity food use and health for American Indians.

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