

RAND REPORT

Obesity in Hispanic Migrant Children in South Jersey

By Sheila Cosminsky ,
Dept. of Sociology, Anthropology, and Criminal Justice, Rutgers, Camden
and Diane Markowitz
Dept. of Anthropology and Geography, Rowan University, Glassboro

This paper is a progress report of a collaborative study of the health and nutritional status in a sample of children of Hispanic migrant agricultural laborers living in southern New Jersey, with a focus on obesity and the risk of Type 2 Diabetes (T2DM). The project is being carried out by Sheila Cosminsky, a cultural anthropologist, at Rutgers University, Camden and Diane Markowitz, a physical anthropologist at Rowan University. Hispanics are the fastest growing segment of the population in the United States (Palinskas and Arciniega 1999). Approximately 3-5 million individuals perform migrant agricultural labor in this country each year. 87% of whom are Hispanic. Of these, roughly 66% bring their children with them. (Mines 1997, Rudecha 1994). While they may return home to visit, most will take up permanent residence in this country, regardless of their legal status. Most of the migrant workers in New Jersey are part of the Eastern migrant stream, migrating between Florida and various parts of the eastern United States including some who regularly return to Mexico. This population is primarily Mexican, along with a small number of Central Americans, and suffers from extreme economic deprivation and in whom there may be health disparities associated with that deprivation. Virtually nothing is known about their health and growth status of

the children.. Even less is known about the cultural, behavioral, demographic and economic factors that affect their growth and nutritional status.

This is a population at high risk of both obesity and type 2 diabetes. Overweight in childhood and adolescence is known to be associated with an increased likelihood of both obesity in adulthood and type 2 diabetes in childhood and adulthood (Dietz 1998, Fagot-Campagna et al. 2001, Ebbeling et al. 2002). The incidence of new cases of type 2 diabetes has risen dramatically, especially in non-white populations. Mexican-Americans in particular, are a high risk group for T2DM. T2DM related to obesity and family history has become a burgeoning public health problem in Mexican-American youth. This study will identify the prevalence of obesity in the migrant pediatric community and will compare cultural, behavioral, demographic and economic variables between families whose children are overweight and those whose children are not. We hypothesize that: (1) the prevalence of obesity (as measured by BMI/age) in this sample matches or exceeds that of Hispanics, as documented in the NHANES III (National Health and Nutrition Survey); (2) Demographic, physical activity and dietary variables are correlated with the likelihood of obesity; and (3) migration frequency is correlated with dietary, physical activity and demographic variables, and negatively correlated with likelihood of obesity. Information gathered from this study may be used to develop culturally appropriate and financially feasible interventions designed to prevent obesity and thereby diminish their risk for type 2 diabetes.

Gathering data about migrant children is extremely difficult because of the transience of their families. The importance of assessing their needs, however, cannot be overestimated, as Quandt et al. state (2001: 28) "Population movement contributes to less

access to health care, to reduced continuity of care, and to greater health risks relative to the general population. Movement also makes it difficult to link these factors with health outcomes”.

Migrant workers labor mainly on two different kinds of farms. The first are the vegetable farms, where they weed early in the season, pick later and pack at the end. When the vegetable season is over, some families stay and earn their living by doing landscaping and other unskilled labor until November, at which point, many return to Florida. These families can be resident for 6-9 months. While many do not have telephones and move periodically to different housing within the same area, it is relatively simple to find and interview them, because the children usually remain within the same school system.

The second are the blueberry farms. By contrast with the vegetable season, the blueberry season is extremely short and, of late, increasingly early. While a small number of workers are employed in weeding and irrigation, the majority arrive in time to harvest and then rapidly move on – usually to Maine or Michigan – as soon as the harvest is done. Many migrant agricultural workers’ living conditions are acknowledged to be terrible (Miles and Sonnevile 2002 , ROI 2002). The housing available, particularly for blueberry workers, is grossly inadequate and it is not unusual for two families to share a single motel room at high rent or even to live in their cars. Families therefore are resident for only 4-6 weeks and the time available to interview them is limited.

All are living below - in some cases considerably below - the poverty line.

Most lack access to healthy foods, and many to cooking facilities, resulting in dependence on prepared foods, most of which are high in carbohydrates and fats (

Markowitz 2000). In recognition of this fact, the educators who care for these children (with a mix of Federal, State and private funds), provide 2 and sometimes 3 meals daily, often with between-meal snacks. Since children are enrolled in these programs 5 days a week, this forms a significant proportion of their nutritional intake, though initial observations suggest that some of these meals go uneaten. The meals must conform to Federal guidelines, but considerable leeway is permitted in the amount of carbohydrates and fats included. The result is that all children are being offered far more calories in the form of carbohydrates and fats than is recommended (as described by Worobey et al, 2002). For obese children, this may be exacerbating their metabolic problems.

Methods

During the summers of 1997 - 2002, Dr. Markowitz from Rowan University took anthropometric measurements of height, weight and 4 skin fold thicknesses of children of Hispanic migrant agricultural workers in southern New Jersey who were enrolled in a pilot study on growth and nutrition. In 2000, once it had become apparent that there was a high prevalence of overweight, the project became a collaborative one with Dr. Cosminsky investigating the demographic, cultural, behavioral and economic correlates of overweight.

Migrant children are enrolled in the migrant Head Start programs in Newtonville, Hammonton and Bridgeton, New Jersey and school-age migrant children attend summer programs in Egg Harbor City, Winslow Township and Bridgeton, New Jersey. Their parents were asked to enroll in this study by recruiters for the summer educational programs. Dr. Cosminsky and Dr. Markowitz also attended evening parent meetings at

each center (occurring once per month) to explain the objectives to parents and to encourage them to permit their children to participate.

The sample was a convenience sample, encompassing all children whose parents agreed to participate and who then could be measured in the time available and with the staff available. The procedure for anthropometric measurements was explained to participating children, and no child who objected was measured. Through the summer of 2001, 525 children were measured; 53.1% were male, 46.9% were female; the mean age was 7.2 years with a standard deviation of 3.3. Data from 2002 have not yet been entered nor has skin fold data been analyzed.

During the summer of 2001, a questionnaire was devised by Dr. Cosminsky and translated into Spanish by two independent bilingual speakers and pretested on a small sample of families. In Summer 2001 through Summer 2002, Dr. Cosminsky trained seven bilingual interviewers who, along with herself, administered in Spanish a revised version of the questionnaire. These interviewers were teachers in the Head Start programs, outreach workers (recruiters), social workers in the migrant summer programs and one volunteer worker, Kristy Romeo. All questionnaires were administered in face to face interviews and responses recorded by the interviewer because a large proportion of the adults are illiterate in Spanish as well as in English. Thus far, a total of 48 families with 76 children (51% male, 49% female) in the 1-18 year-old age group have been interviewed and parents have been characterized in several ways (see Table 2). With only two exceptions, these were two-parent families; this is typical among the migrants. Two senior undergraduate students, Leo West and Pete Higgins, and Kristy Romeo assisted

with bibliographic searches and entering data from medical records of migrant children from the Gloucester County Social Services, and entering data from the interviews.

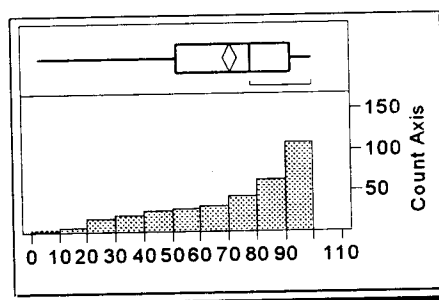
Results:

Data from all summers were pooled, as there was no significant difference in the mean of any variable from one summer to the next.

According to Ogden et al. (2002), settled Mexican-American children from 6-19 years of age are more likely to be overweight than are non-Hispanic whites. In our total sample, 22.3% can be classified as overweight and 22.8% as “at-risk-of-overweight”. The mean BMI percentile is 72.7 (see Fig. 1).

Fig. 1. BMI percentiles for age
In southern New Jersey
Hispanic migrant children. N=525

Mean = 72.7 (predicted mean 50.0)
Median = 80.0



According to our data (Table 1), in most categories there was no significant difference in percent overweight between the south Jersey Mexican migrant sample (1997-2001) and the Mexican-American children in the NHANES 1999-2000 with two exceptions: there was a significantly greater likelihood of overweight in the migrant girls between 6 and 11 years of age and in migrant 2-5 year olds. In the aggregate migrant sample (cross-sectional anthropometrics only, N = 525), there was no difference in the likelihood of boys vs. girls being overweight.

Age groups	US White population		Settled Mexican Americans			Mexican Migrants: S. Jersey sample		
	Males	Females	Males	females	combined M/F	males	females	combined M/F
2-5 year olds					11.1	19.5	18.8	19.5
6-11 year olds	12.0	No data	27.3	19.6		23.4	25.4	24.4
12-18 year olds	12.8	12.4	27.5	19.4		24.0	18.8	22.0

TABLE 1: Percent overweight among non-Hispanic white Americans, settled Mexican-Americans, from NHANES, 1999-2000 (Ogden et al. 2002) and percent overweight in the Mexican migrant children in this sample (where N = 525). According to the CDC, overweight in children is defined as being $\geq 95^{\text{th}}$ percentile of BMI for age. CDC protocol excludes migrants from participation in the NHANES.

There is no significant difference among our sample's age groups in likelihood of being at-risk-of-overweight or overweight. What is most disturbing about this finding is that there is a high frequency of overweight even among 2-5 year old migrant children. In the study of Ogden et al.(2002), the frequency of overweight appears to increase between the 2-5 year old age group and the 6-11 year old age group. A high frequency of overweight in 2-5 year olds in the migrant sample may portend an even greater frequency in the future among 6-11 year olds.

Mean age		Mean # of years migrating		Mean age at 1 st migration		Mean years of education		Mean # of places lived in previous year*	Mean # children in the home
mother	father	mother	father	mother	father	mother	father		
30.5 (s.d. 7.1)	34.5 (s.d., 7.7)	7.0 (s.d., 6.8)	9.1 (s.d. 6.5)	23.4 (s.d., 11.1)	25.3 (s.d., 10.1)	6.8 (s.d., 3.1)	6.3 (s.d., 3.2)	1.6 (s.d., 0.7)	2.6 (s.d., 1.1)

Table 2: Characteristics of parents and 48 families interviewed between 2001 and 2002. The sample was skewed toward migrants who stayed longer in the area than 6 weeks.

Parents' data was compared with their children's likelihood of overweight. Of course, the sample size thus far is insufficient to draw any secure conclusions, so all of the following conclusions remain to be verified when the sample is sufficiently large. So far, though, none of the following variables is a significant predictor of the child's likelihood of overweight: sex, mother's or father's years of education, mother's or father's job, whether or not the family was getting food aid or had medical insurance or number of places the family has lived in the past year.

By comparison with other studies (Dietz and Gortmaker 2001, Gortmaker et al 1990) our pilot study has shown no association between amount of television viewing or frequency of eating in fast food restaurants. We hypothesize that neither factor, in this sample, rises to the threshold where effects would be noticeable. Nevertheless, we will continue to incorporate questions that investigate children's amount of television watching and fast-food and soft drink consumption. We have not observed children spending a lot of time in front of computers or video games: they have none.

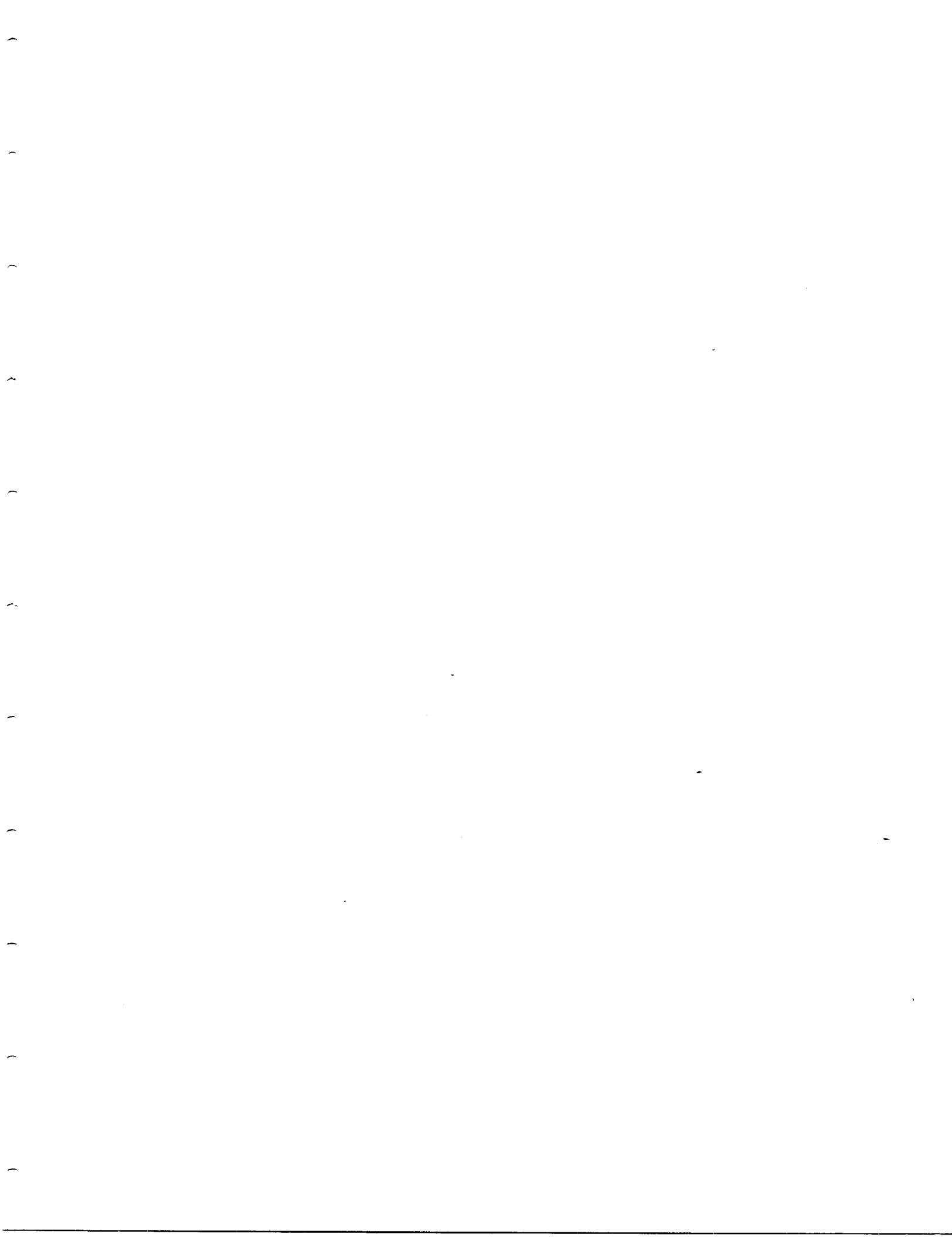
A few variables were significant predictors of children's likelihood of overweight. Thus far, it appears that children born in Mexico are significantly less likely than those born in the U.S. to be overweight (prob.> $\chi^2 = 0.02$) – a conclusion that matches that of Popkin and Udry (1998). We also sought to identify who was caring for the children in the home outside of school hours. When aunts or grandmothers were the usual caregivers, children were significantly more likely to be overweight (prob.> $\chi^2 = 0.024$). For those children cared for by siblings, unrelated babysitters or changing babysitters, the

likelihood of being stunted was significantly increased; this will be investigated in a future study.

This sample of children displays a prevalence of obesity comparable to that of settled Mexican-Americans, even though their parents: have less income, far poorer living conditions, considerably less education, don't take the family out to eat fast food more than once per week (on average), report that the children watch TV 2 or fewer hours per day, cannot be described as acculturated on any scale.

The usual education programs targeted at literate parents will miss many of the because of illiteracy, and will also ignore other significant family members whose effect on children's diet may be considerable. A powerful environmental influence is exerted on these children and the effect is observable very early. The project aims at discovering what is this influence.

In the next phase of the study, we are focusing on dietary consumption, dietary change and food security. We are currently in the process of designing and preparing the instruments that will be used in interviewing the next group of migrants who will be arriving this May and working this coming season.



References

- Dietz WH. Health consequences of obesity in youth: childhood predictors of adult disease. *Pediatrics*. 1998;518-25
- Dietz WH and Gortmaker SL. Preventing obesity in children and adolescents. *Annu. Rev. Public Health*. 2001;22:337-53.
- Ebbling, CB, Pawlak DB and Ludwig S. Childhood obesity: public health crisis, common sense cure. *Lancet* 2002;360:473-82.
- Fagot-Campagna A, Narayan KM, Imperatore G. Type 2 diabetes in children. *BMJ* 2001;322:377-378.
- Gortmaker SL, Dietz WH and Cheung LWY. Inactivity, diet and the fattening of America. *J. Am. Dietetic Assoc.* 1990;90(9):1247-1255.
- Markowitz, DL. The smallest migrants: Hispanic migrant child growth in rural southern New Jersey. *Am. J. Hum. Biol.* 2000;12(2): 278 (abstract).
- Miles AM and Sonnevile C. The cultural construction of poverty. In: RB Morrison and CR Wilson (eds.). *Ethnographic Essays in Cultural Anthropology*. Itasca, Illinois: FE Peacock Publishers, 2002.
- Rural Opportunities, Inc. Migrant Head Start Community Needs Assessment 2002-2003. Vineland, NJ.
- Ogden CI, Flegel KM, Carroll MD and Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA* 2002;288(14): 1728-32.
- Popkin BM and Udry JR. Adolescent obesity increases significantly in second and third generation U.S. immigrants: The National Longitudinal Study of Adolescent Health. *Am. Soc. for Nutritional Sci.* 1998: 701-706
- Quandt SA, Preisser Js and Arcury TA. Mobility patterns of migrant farmworkers in North Carolina: implications for occupational health research and policy. *Human Organization* 2002;51:21-29.

APPENDIX

During the year we (my co-PI, Dr. Markowitz from Rowan University and I) gave several presentations at professional meetings.

- Obesity, Diabetes, and Acculturation: Interaction in Hispanic Migrant Children. The American Anthropological Association annual meetings, Washington, DC., Nov. 2001. This was part of a session on Globalization, Social Transformations and the Diabetes Epidemic.
- Acculturation, Obesity and Diabetes Risk in Hispanic Migrant Children. Poster presented at the Applied Anthropology meetings, Atlanta Georgia, Mar. 2002
- Obesity Begins Early: The Hispanic Migrant Child. National Head Start Research Conference, Washington, DC. June 6, 2002
- Obesity, Diabetes and the Hispanic Migrant Child: Assessing the Risk, Examining the Etiology. Division of Endocrinology, Children's Hospital of Philadelphia, May 10, 2002.
- Obesity in the Children of Migrant Hispanic Agricultural Workers in Southern New Jersey. New Jersey Obesity Group meeting. Rutgers University, New Brunswick, Oct. 4, 2002.
- Workshop on Preventing Type II Diabetes in Migrant Hispanic Children: A New Task for Head Start. Migrant and Seasonal Head Start National Conference, Washington DC. Feb. 4, 2003.
- Presentations for Headstart teachers, for Gloucester County Social Services, for Rural Opportunities Inc., (which runs the migrant Head Start programs), and for parents' meetings.