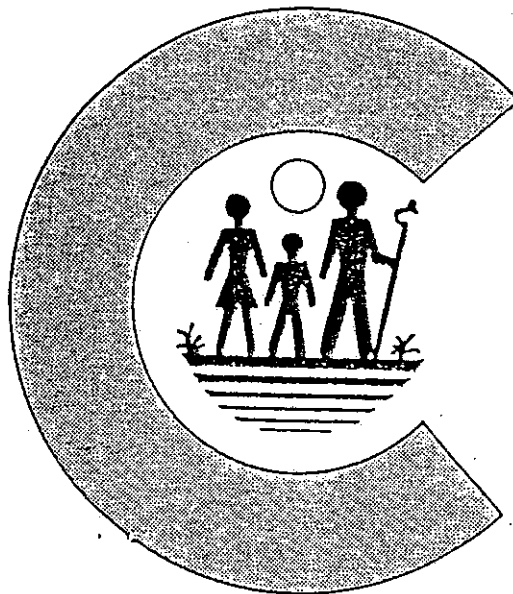


ACCESS TO HEALTH CARE: A SURVEY OF COLORADO'S
MIGRANT FARMWORKERS

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INTRODUCTION

Migrant farmworkers are among the most deprived of the nation's medically indigent. Pervasive poverty, underemployment, isolation, and alienation make their access to health services a critical issue. In the current climate of reallocations and program reductions, it is important to assess the government's fulfillment of its ethical and moral obligation to provide adequate care to this disadvantaged minority.

The President's Commission for the study of Ethical Problems in Medicine and Biomedical and Behavior Research (1983:4-5) concluded that:

Society has an ethical obligation to ensure equitable access to health care for all...Equitable access to health care requires that all citizens be able to secure an adequate level of care without excessive burdens...The Federal government has the ultimate responsibility for seeing that health care is available to all when the market, private charity, and government efforts at the state and local levels are insufficient in achieving equity...Efforts to contain rising health care costs are important but should not focus on limiting the attainment of equitable access for the least well served portion of the public.

The purpose of this report is to utilize data collected in a sample survey of Colorado's adult migrant farmworker population to determine their health needs, health services utilization, and overall access to care. Health needs include selected indices of medical, dental, nutrition and reproductive health. The conclusions and recommendations of the report address pertinent issues in the funding and delivery of health care services to the migrant farmworker population.

ACCESS TO HEALTH CARE

Current efforts to limit federal health care expenditures threaten to minimize the gains made in the 1960s and 1970s to increase access to health care by traditionally disadvantaged groups (Aday et al., 1984; Andersen et al., 1986). Access is defined as "those dimensions which describe the potential and actual entry of a given population group to the health care system" (Aday et al., 1984:13). Two broad influences on access are

characteristics of both the health care system and the population at risk. According to the framework proposed by Aday & Andersen (1975) and Aday et al. (1984), the health care system's influence is exerted through its structure, resources, and policies. For the population at risk, characteristics related to health needs, wants, resources, utilization, and satisfaction with available health services are associated with access to services.

Reviewing the literature and utilizing data from several national surveys, Andersen et al. (1986) applied this framework to access of health care by Hispanics, the predominant migrant farmworker group in Colorado. Significant characteristics of the population include education, occupation, income, language, health care beliefs and attitudes, regular source of health care, insurance coverage, and health needs. The relationship between low education and reduced access to care may be attributed to traditional health beliefs and practices, a distrust of modern medicine, or lack of information about available services. Low occupational status is often associated with both low income and limited or no insurance. Language differences often pose a formidable barrier to both accessing and utilizing health services in facilities without bilingual staff.

Perceiving their health status to be generally less favorable than that reported by white non-Hispanics (NRA, 1980), Hispanics are also less likely to have a usual source of health care (Carter, 1985). Service utilization rates of Hispanics are also lower than for whites, notably in the areas of hospital visits, dental visits (NCHS, 1984), prenatal care, and family planning (NCHS, 1981). Finally, the cultural beliefs of many Hispanics include health practices which may place more reliance on home remedies, over-the-counter medicines, herbs, and teas as a response to both acute and chronic disease conditions. Confidence in folk healers as a substitute or supplement to the modern health care system is a dominant theme for a significant minority of migrants in making personal health decisions.

Focusing on the health system, Andersen et al. (1986:242) reviewed the Hispanic health literature for criticisms of the health care system and noted, "language barriers, middle-class values and attitudes, and cultural disparities between client and providers." Concomitantly, dissatisfaction with service was higher among Hispanics than other ethnic groups, especially in the areas of cost, waiting time, interaction with the physician, and time spent with the physician.

More difficult to measure are the differences in health and illness beliefs, understandings, and expectations of ethnic minorities and those of health professionals in the modern health care system, differences which may pose a barrier for care for the minority client (Sakala, 1985). While in traditional cultures illness is viewed as a disruption in the harmony or balance between an individual and the social, spiritual, or physical environment, for modern medicine the focus is on the clinical assessment of signs and symptoms. These differences in conceptualization of health and illness demand increased communication between provider and client but the structure, values and resources of the health care system often function to thwart this goal.

THE MIGRANT HEALTH SYSTEM

Federal Congress established funding for migrant health and community health services in 1975 and finalized the regulations in 1977. A migratory agricultural worker is defined as an individual whose principal employment is in agriculture on a seasonal basis, who has been so employed within the last 24 months, and who establishes a temporary place of abode for such employment. A migrant health center or program is defined as an entity which either through its staff and supporting resources or through contracts or cooperative arrangements with other public or private entities provides for migratory agricultural workers, seasonal agricultural workers, and the members

of the families of such workers. Funded services include primary care, preventive medical services, preventive dental services, emergency health care and supplemental services such as hospitalization, dental, vision, pharmacy, health education, and outreach.

By 1987, 130 migrant health centers provided health care to over 230,000 migrant farmworkers annually with a federal budget of \$44.5 million. Approximately 85 percent of this amount is allocated for primary care operations, approximately five percent is administrative and approximately 10 percent is discretionary. It is significant to note that 10 percent discretionary spending is a major amount during a period of level funding, inflation, and increased demand for services.

Unfortunately, there is little documentation that those in greatest need of services are receiving them. The Office of Migrant Health in the Department of Health and Human Services (the principal national funding resource for migrant health programs) estimates that only 12-17 percent of the eligible population are recipients of care through its national system. Access to health care is an issue which migrant health administrators and advisers question on a continuing basis (Migrant Health Task Force, 1986, 1987). The need to demonstrate outcome indicators of access, other than dollars spent, is more crucial now than ever before, particularly with planning assumptions that forecast level funding for the next two to three years.

Colorado Colorado is one of over 30 "upstream" states with federally funded programs, upstream indicating that the state is a destination for migrants seeking temporary residence to engage in agricultural labor. The Colorado Migrant Health Program (CMHP) plays a lead role in the provision of health services to a targeted population of approximately 43,000 migrant and seasonal farmworkers and dependent family members. Operating as a section of the Colorado Department of Health, CMHP annually serves approximately 7,000

medical patients and 3,000 dental patients, including nearly 2,000 school-age children enrolled in migrant education summer schools. These services are provided in a variety of settings: outreach clinics, community-based health care organizations, private health care providers with CMHP agreements, migrant education schools, migrant Daycare/Headstart centers and one county health department. An additional combined total of 9,500 medical patients and 3,600 dental patients are served annually by three other migrant health grantees (two in North Central Colorado and one in the San Luis Valley).

THE PROBLEM

Although Colorado has a well-developed statewide system of coordinated health care services for migrant and seasonal farmworkers, effective health care planning has been hampered by the absence of current information on the migrant population's access to health care. Specifically lacking has been basic data on population demographics (age, sex, education, language, family size, work history, permanent residence), health status, health services utilization, and user satisfaction with services received.

The overall goal of the study was to survey Colorado's adult male and female migrant farmworker population, ages 18-50 years, for the purpose of evaluating access to health care and developing recommendations for improving delivery of migrant health care. Related objectives were to 1) develop a research tool (questionnaire) in Spanish and English which could be used in replicating the survey elsewhere in the United States and 2) develop a research methodology which could be replicated elsewhere to generate a scientifically designed random sample of the migrant farmworker population. It is hoped that through similar studies in both upstream and downstream states, an accurate profile of this country's migrant farmworker population will be developed. It is further hoped that once a profile which establishes health needs and access to health care is developed, that it will then be used as a basis for decision-making regarding funding allocations and the deployment of limited resources nationally.

METHODS

Research Design The research design was developed in conjunction with onsite consultation from the National Center for Health Statistics. This consultation incorporated consideration into the sample design of the unusual constraints posed by a migrant population. These constraints included: 1) uncertain estimates for migrant population totals in each area; 2) uncertain predictions as to which housing units would be occupied in a given area; 3) high mobility of the population present in the state during the interviewing period; 4) vagaries in the weather which precipitate unanticipated shifts in employment prompting the migrants to move to other areas or to other states.

For these sampling conditions, it was decided that the most effective approach would be a descriptive study based on a stratified, proportionate, probability sample of the migrant farmworker population residing in Colorado between July 1, 1986 and September 30, 1986. The two strata identified were 1) families and 2) solo males. Solo males were defined as males migrating alone or with other males, and who reside with other males; their marital status is not necessarily "single". The sampling was proportionate in order to account for variations in the numbers of solo males and families estimated to reside in the four areas of the state selected for inclusion in the study. Those areas were: the north central, southeast, south central, and Western Slope, all identified by the CMHP and the Colorado Department of Agriculture as being the most labor-intensive areas of agriculture in the state.

Sample Design The eligible population for the survey was persons 18-50 years of age who were active migrant farmworkers at the time of the survey. The selection of persons for this survey was determined through a scientifically designed sample. A multistage stratified proportionate probability design was employed to arrive at the sample. The State of Colorado was stratified into

four regions, identified above, where there was a known high concentration of migrant farmworkers based on information from previous years. Each of the four strata was divided into two substrata. One substratum consisted of the latest available listing of all family housing units (FHU's) within a particular stratum. The other substratum consisted of a listing of all single male beds within all dormitories within a particular stratum.

An attempt was made at arriving at a self-weighting sample, that is, an effort was made in the sampling scheme in selecting persons with approximately the same probability. This was accomplished by applying the overall sampling fraction (desired total number of sample persons divided by the approximate number of eligible persons in the population) to the estimated number of eligible persons within each substratum. The number of adults in the FHU substrata was approximated by multiplying the estimated average number of FHU's in that substratum by a factor of 3 (assumed to be the average number of adults per family in all regions, except in the Western slope where two adults per family was assumed). Within the solo male substrata, the overall sampling fraction was simply applied to the estimated number of solo males in each substratum.

Once the sample number of FHU's and sample number of solo males were determined within a stratum, the actual selection was carried out by taking a systematic random sample of FHU's and dormitory bed numbers within each substratum. Dormitory beds were selected in a single stage process. However, the selection of sample persons within the FHU strata was carried out as a two-stage process. That is, the FHU was selected in the first stage and then eligible males and females were listed separately within the selected FHU. The second stage of selection consisted of randomly selecting a male and a female from the sample FHU. If only one male or female resided in the sample FHU, each was selected with certainty (probability = 1).

Field Procedures Related to Random Selection of Respondents No listing of the target population was available from which to select a sample prior to initiation of the survey. Instead, lists of the addresses or locations of residences usually occupied by migrants were constructed for each identified area of the state, one list for family housing units (FHU's) and one list for solo male dormitories. Listers then investigated the solo male dormitories to determine the number of beds available; these bed numbers then comprised the lists used to designate the solo male respondents. Although some residences for solo males were vacant at the time of the listings, it was assumed that they would be occupied at some time during the study period and their bed numbers were added to the solo male lists.

From the two separate lists (FHU's and bed numbers in the solo male dormitories), the sample for the study was randomly selected. The assigned lists with the designated FHU's and solo male dormitory bed numbers were given to each interviewer along with a detailed map of the specific geographical area. In each designated FHU interviewers listed and numbered all adult males and all adult females eligible for inclusion in the study. One adult male and one adult female was then chosen randomly (numbered chips selected blindly from a bag) for the interview. In each dormitory the solo males occupying the designated numbered beds were the designated solo males for the interviews. No substitutions were allowed. Following the interview, each respondent was given five dollars. After completion of the dental screening, the respondent was given an additional five dollars.

In each area there were fewer occupied residences than anticipated, for reasons primarily related to the weather. The severe spring frost on the Western Slope damaged the fruit crops to the extent that only half the work force was hired for the summer and fall harvests. Severe hail damage in the

vegetable and sugar beet fields in the north central area closed two family camps early because of lack of work. One camp for solo males in the south central area failed to open, without any clear reason known to anyone.

Instrument Development Two instruments were developed for the Colorado Migrant Health Survey: 1) a household screening form to determine eligible family members in sample housing units, and 2) a survey questionnaire in Spanish and English. The questions related to Health Services, Hypertension, Pesticide Exposure, and Medicine/Vitamin Usage were derived from the Hispanic Health and Nutrition Examination Survey (NCHS 1985). The family planning section was based almost entirely on the Centers for Disease Control questionnaire used in their U.S.- Mexico border survey (1979). Several questions related to hunger were adapted from a tool developed by the Food Research and Action Center (FRAC 1986) and the Utah Nutrition Monitoring Project (1985). The Selected Conditions list was derived from the Wisconsin migrant farmworker survey (Slesinger, 1979).

Interviewer Training Fourteen bilingual interviewers, five males and nine females, were hired on a part-time basis to work throughout the state through the end of September. Male interviewers were used exclusively for interviews with males, and female interviewers were used predominantly for interviews with females. All interviewers were required to complete an intensive two-day training program, after which they were given their assignments. The first three completed surveys of each interviewer were carefully reviewed to ensure that instructions were followed. In addition to weekly telephone contact, the field supervisor made at least two trips to each area to supervise the interviewers and monitor their progress in the completion of their assignments.

Dental Screening. Dental screening was carried out at a pre-arranged time after the respondent completed the interview, either in a local dental clinic or at the migrant site. Eight dental examiners, dental hygienists and dentists, were individually trained to conduct two standardized dental indices: a dental caries status and treatment index (DMFT-modified) and a periodontal health index (CPITN). Dental examiners used calibrated examination instruments and approved portable examination equipment. Dental screening times were scheduled for evening hours to accommodate field work schedules; transportation to and from the screening locations was provided by the survey interviewers when needed. The interviewers, present at every screening, provided a familiar link between the participant and the dental examiner and interpreted when necessary.

Data Collection Results The original goal of the study was to complete 600 interviews. Because of the weather, several camps remained closed throughout the summer and at least two closed earlier than usual. The subsequent listings resulted in 513 designated respondents of which 331 were interviewed, a response rate of 64.5 percent. Of the 182 nonparticipants, there were 52 refusals; 93 moved after one eligible respondent in the FHU (Family Housing Unit) had been interviewed and included in the study; 37 were ineligible because they did not meet the study criteria (i.e. one family adult met the study criteria but the other family adult was not within the age range or was not a farmworker).

Dental screening was completed on 172 respondents. Of the 159 interviews without dental screening, there were 46 refusals; 46 persons moved prior to dental screening. One area was without dental examiners resulting in 67 non-dental screenings.

Data Analysis and Statistical Computations Data analysis was performed on a Compaq microcomputer using the Statistical Package for the Social Sciences (SPSS/PC). The statistics presented are based on a sample of the target population rather than on the entire population. The difference between an estimate based on a sample and the true population is called the sampling error. The expected magnitude of the sampling error is measured by a statistic called the standard error. The standard error is used to compute the confidence interval, the estimate plus or minus two standard errors of the estimate within which the true population value lies with 95 percent confidence. The computation of confidence intervals and standard errors was adjusted to account for the difference between the targeted sample and actual sample in each stratum. The following equations taken from Kish (1965) provide a correction and describe the calculations. (attached).

IF:

n_h = number of sample migrant workers in stratum h.

N_h = estimated total number of migrant workers in stratum h.

$f_h = n_h / N_h$.

$w_h = N_h / \sum N_h$.

s_h^2 = sample stratum variance of the variable y.

p_h = proportion of cases in stratum with attribute.

p = proportion of entire sample with attribute.

THEN:

Confidence interval = $p \pm 1.96 * S.E.$

where Standard Error S.E. = $\text{SQRT}(\text{var}(p))$ and..

$$\text{var}(p) = \sum w_h^2 (1-f_h) \frac{p_h(1-p_h)}{n_h-1} \quad \text{for proportions, and ..}$$

$$\text{var}(\bar{y}) = \sum w_h^2 (1-f_h) \frac{s_h^2}{n_h} \quad \text{for measured variables.}$$

Note that 1.96 is the standard normal deviate corresponding to $\rho = .05$.

THE POPULATION

Interviews from a total of 329 adult farmworkers, between the ages of 18 and 50 years, were analyzed. In terms of ethnicity, Hispanics predominated (94.2%) followed by American Indian (2.4%) Anglo (1.2%) or other (2.1%). The sample was stratified by solo males and families resulting in the following totals: 129 family males, 126 family females, and 74 solo males. There were differences among the three groups in terms of age, marital status, place of permanent residence, language skills, and whether this was their first visit to Colorado. The term "sex status" is used when differentiating family males, family females and solo males. Confidence intervals are indicated in parentheses, substituted with an asterisk when a small N resulted in a confidence interval greater than the estimate value.

Age Solo males were slightly younger with a mean age of 29.4 years compared with a mean for family males of 32.5 and family females of 31.9 years. The mean for the total population was 31.6 (Table 1).

Table 1
Respondents by Age, Numbers and Percentages

	Number	%	Mean	Median	Mode
Family Males	129	39.2	32.5 (1.4)	33.0	36.0
Family Females	126	38.3	31.9 (1.4)	32.0	27.0
Solo Males	74	22.5	29.4 (2.0)	28.5	22.0
Total Population	329	100.0	31.6 (0.4)	31.0	21.0

Permanent Residence Over half (51.5%) of the population reported that their permanent residence or "homebase" was in Texas (Table 2). Permanent residences outside the United States, predominantly Mexico, accounted for 28.3 percent of the total. Six percent (6.4%) were intrastate migrants who lived year-round in Colorado, while another 14 percent came from states other than Texas or Colorado. Several demographic variables were shown to be associated with place of permanent residence (chi square $p < .05$). They include:

- 1) sex status (Table 3): more solo males (78.4%) than family males (17.2%) or family females (10.3%) reported a homebase outside the U.S.;
- 2) marital status (Table 4): more single persons (58.3%) than married persons (21.2%) had a homebase outside the U.S.;
- 3) age: younger migrants were more likely to have a homebase outside the U.S. The mean age of migrants from Texas was 33 years, other U.S. states 32.8, and Mexico and Guatemala 28.1 years.
- 4) language (Table 7): migrants living outside the U.S. were more likely to speak mostly Spanish, more likely to read Spanish well, and less likely to be able to read English.

Table 2
Permanent Residence, Numbers and Percentages

	Number	Percentage
Colorado	21	6.4 *
Texas	168	51.3 (4.4)
Other States in U.S.*	46	14.0 (9.1)
Outside U.S.**	<u>93</u>	<u>28.3 (6.2)</u>
Total	328	100.0

* Arizona, California, Florida, Montana, New Mexico, Oklahoma, Massachusetts,
 ** Mexico, Guatemala

Table 3
Permanent Residence by Sex Status, Numbers and Percentages

	Family Males		Family Females		Solo Males		
	N	%	N	%	N	%	
Texas	81	63.3 (9.4)	82	65.1 (9.4)	5	6.8	*
Other States (including Colo.)	25	19.5 (18.1)	31	24.6 (15.9)	11	14.8	*
Outside U.S.	<u>22</u>	<u>17.2 (17.2)</u>	<u>13</u>	<u>10.3 *</u>	<u>58</u>	<u>78.4</u>	<u>(11.3)</u>
Total	128	100.0	126	100.0	74	100.0	

Table 4
Permanent Residence by Marital Status, Numbers and Percentages

	Married		Previously Married		Single	
	N	%	N	%	N	%
Texas	137	56.8 (4.1)	13	48.2	18	30.0
Other States (including Colo.)	53	22.0 (7.5)	7	25.9	7	11.7
Outside U.S.	51	21.2 (8.5)	7	25.9	35	58.3
Total	241	100.0	27	100.0	60	100.0

Education The mean education level for the total population was 6.4 years with a mean and mode of 6.0. The mean educational level for the females was slightly higher at 6.7, followed by the family males at 6.3, and solo males at 6.2 years. Education was not associated with sex, sex status, or homebase. The frequencies by sex status are found in Table 5.

Table 5
Grades Completed in School by Sex Status, Percentages and Statistics

	Family Males %	Family Females %	Solo Males %
None	5.5 *	8.0 *	5.4 *
1-5	32.0 (13.4)	28.8 (14.5)	33.8 (15.2)
6	23.4 (13.1)	15.2 (14.4)	23.3 (19.7)
7-8	13.3 *	16.8 *	5.5 *
9-11	14.9 (15.1)	16.8 *	16.2 *
12 or more	10.9 *	14.4 *	10.8 *
Total	100.0	100.0	100.0
Mean	6.3 (0.6)	6.7 (0.6)	6.2 (0.9)
Mode	6.0	6.0	6.0
Median	6.0	6.0	6.0
	(N = 128)	(N = 125)	(N = 74)

Marital Status Most of the migrants in this study were married (73.6%), followed by those reporting to be single (18.2%), separated (4.9%), divorced (2.7%), or widowed (0.6%). Marital status was associated (chi square <.05) with:

- 1) sex status (Table 6): 50.0% of the solo males reported being single as contrasted with family males (14%) and family females (4.0%);
- 2) sex: females were more likely (83.3%) to be married than males (67.5%);
- 3) permanent residence (Table 4): 58.3 percent of the single persons, as contrasted with only 21 percent of the married persons, identified a permanent residence outside the U.S.

Table 6
Marital Status by Sex Status, Numbers and Percentages

	Family Males		Family Females		Solo Males	
	N	%	N	%	N	%
Married	109	84.4 (8.1)	105	83.3 (8.4)	28	37.8 (16.7)
Previously Married (includes widowed, divorced, separated)	2	1.6 *	16	12.7 *	9	12.2 *
Single	18	14.0 *	5	4.0	37	50.0 (16.3)
Total	129	100.0	126	100.0	74	100.0

Language Skills The vast majority of the population reported that the language spoken most frequently was Spanish (77%). Seventeen percent spoke English and Spanish about the same. Six percent spoke mostly English. Language was associated with other variables (chi square <.05). Persons who reported a permanent residence outside the United States were most likely to speak mostly Spanish (97.8%) (Table 7). A higher proportion of solo males (94.6%) than family males (75.9%) spoke mostly Spanish (Table 8). Eighty-five percent (85.7%) of those who spoke mostly Spanish had no education. The ability to read Spanish (Table 9) was not significantly related to sex but was

associated with education. The ability to read English was associated with sex status, sex, education, and homebase. Solo males had the highest proportion (71.6%) unable to read English at all, while females were more likely (32.5%) to report being able to read English very well (Table 10).

Table 7
Language Spoken Most Frequently by Permanent Residence, Numbers and Percentages

	Texas		Other State		Other Country	
	N	%	N	%	N	%
Mostly Spanish	123	73.2 (5.0)	38	57.6 (9.4)	91	97.8 (6.3)
Mostly English	6	3.6	14	21.2 (9.4)	0	00.0
Both the same	39	23.2 (7.5)	14	21.2 (15.8)	2	2.2 *
Total	168	100.0	66	100.0	93	100.0

Table 8
Language Spoken Most Frequently by Sex Status, Numbers and Percentages

	Family Male		Family Female		Solo Male	
	N	%	N	%	N	%
Mostly Spanish	98	75.9 (88.6)	85	68.0 (9.4)	70	94.6 (10.2)
Mostly English	6	4.7 *	12	9.6 *	2	2.7 *
Both the same	25	19.4 (17.4)	28	22.4 (17.4)	2	2.7 *
Total	129	100.0	125	100.0	74	100.0

Table 9
Ability to Read Spanish, Numbers and Percentages

	Number	Percentage
Very well	195	59.2 (4.1)
Some	90	27.4 (5.9)
Not at all	44	13.4 (8.6)
Total	329	100.0

Table 10
Ability to Read English by Sex Status, Numbers and Percentages

	Family Male		Family Female		Solo Male		
	N	%	N	%	N	%	
Very well	27	20.9 (16.9)	41	32.5 (13.6)	4	5.4	*
Some	47	36.4 (12.8)	26	20.6 (16.4)	17	23.0	(23.0)
Not at all	55	42.7 (11.5)	59	46.9 (11.8)	53	71.6	(12.1)
Total	<u>129</u>	<u>100.0</u>	<u>126</u>	<u>100.0</u>	<u>74</u>	<u>100.0</u>	

Employment History All of the persons included in this survey, by definition, were currently involved in farmwork. Because of the exigencies of migrant farm labor, not all were presently employed full time at the time of the interview; some were unemployed awaiting work in the fields (Table 11). Two women who identified themselves as homemakers also did farm labor.

Table 11
Employment Status, Numbers and Percentages

	Number	Percentage
Work Fulltime	138	42.1 (4.9)
Work Parttime	162	49.4 (4.6)
Unemployed	26	7.9 *
Homemaker	<u>2</u>	<u>.6</u> *
Total	<u>328</u>	<u>100.0</u>

The mean age for starting farm labor for the entire population was 16.6 years with a mode of 12 and a median of 15, and a range from four years to 43 years. The median age for solo males, family males and family females to begin farmwork was 15 years.

For the majority, migration was a tradition. Seventy-three percent (73%) stated that their fathers had done migrant farmwork; 53.5 percent reported that their grandparents had done migrant farmwork. There were no associations with sex, sex status, or permanent residence.

One third (34%) reported that this was their first visit to Colorado. Of those who were from outside the country (Mexico and Guatemala), (46.2%) reported being here for the first time (Table 12). For all those who had been to Colorado before, the average number of years coming to Colorado was six, the mode was two, and the median was four. There were no associations with sex or sex status.

Table 12
Whether First Visit to Colorado by Permanent Residence,
Numbers and Percentages

	Texas		Some Other State		Outside U.S.	
	N	%	N	%	N	%
Yes	51	30.4 (7.7)	17	37.0 (15.3)	43	46.2 (6.5)
No	117	69.6 (4.9)	29	63.0 (9.0)	50	53.8 (7.3)
Total	168	100.0	46	100.0	93	100.0

Annual Income In 1985 the poverty threshold for a family of four was \$8,450 (non-farm) and \$7,190 (farm). The poverty threshold for a family of six was \$11,210 (non-farm) and \$9,530 (farm). Ninety percent of the migrant farmworker families reported family incomes in 1985 of \$11,000 or less; nearly two thirds had incomes of \$7,000 or less. The mean family income (excluding solo males) was \$6,367. Income was calculated for individuals as well as for families (Tables 13, 14, and 15). For all individuals in the total population, the mean income was \$3,571, with a median and mode of \$3,000. The range was \$0 to \$22,000, the latter reported by a family male who had worked for the railroad in 1985. Income takes on more significance when the number of family members at their homebase is taken into consideration. The average number of family members living at the permanent residence was 6.2 for families and 5.4 for solo males (Tables 16, 17, and 18). Forty-three percent (N=141) believed that they were financially worse off in 1986 than they were in 1985. Another 28 percent (N=90) thought there had been no change.

Table 13
Annual Income for Individuals and Families, Statistics

	Number	Mean	Mode	Median	Minimum	Maximum
Family males	129	\$5,086 (364)	\$4,000	\$4,300	0	\$22,000
Family females	126	2,237 (585)	0	1,900	0	8,000
Solo males	74	3,350 (931)	8,000	2,000	0	12,000
Total Population	329	\$3,571 (366)	\$3,000	\$3,000	0	\$22,000
Families (no solo males)	152	6,367 (707)	5,000	6,000	0	22,000

Table 14
1985 Annual Family Income,
Numbers and Percentages*

	Number	Percentage	Cumulative Percentage
0 - 1,000	11	8.0	8.0
1,001 - 3,000	17	12.4	20.4
3,001 - 5,000	33	24.1	44.5
5,001 - 7,000	27	19.7	64.2
7,001 - 9,000	25	18.2	82.4
9,001 - 11,000	10	7.3	89.7
11,000 - 13,000	6	4.4	94.1
13,001 - 15,000	5	3.7	97.8
15,001 and over	3	2.2	100.0
	<u>137</u>	<u>100.0</u>	

Missing cases = 15

* Excludes Solo Males

Table 15
1985 Annual Family Income - Solo Males

	Number	Percentage	Cumulative Percentage
0 - 1,000	18	33.3	33.3
1,000 - 3,000	14	26.0	59.3
3,000 - 5,000	6	11.1	70.4
5,000 - 7,000	3	5.5	75.9
7,001 - 8,000	8	14.8	90.7
8,000 + and over	5	9.3	100.0
	<u>54</u>	<u>100.0</u>	

Missing cases = 20

Table 16
 Number of Family Members Who Live at the Homebase,
 Numbers and Percentages*

	Number	Percentage	Cumulative Percentage
1	2	1.4	1.4
2	6	4.1	5.4
3	10	6.8	12.2
4	26	17.7	29.9
5	25	17.0	46.9
6	22	14.9	61.9
7	14	9.5	71.4
8	15	10.2	81.6
9	7	4.8	86.4
10 or more	<u>20</u>	<u>13.6</u>	100.0
	147	100.0	

* Excludes solo males.

Table 17
 Number of Family Members Who Live at the Homebase,
 Statistics

	Number	Mean	Mode	Median
Families	152	6.2	4.0	6.0
Solo Males	74	5.4	5.0	5.0

Table 18
 Number of Working Family Members at Homebase, Statistics

	Number	Mean	Mode	Median
Families	152	2.9	2.0	2.0
Solo Males	74	2.2	1.0	2.0

UTILIZATION OF HEALTH SERVICES

As a moving population, predominantly monolingual in Spanish, migrant farmworkers face many potential obstacles related to access to care. This section looks at health status, usual place of care, and problems encountered while seeking care. The incidence of hospitalizations, days in bed, and farmworker injuries are documented.

Health Condition Over half (50.5%) identified their health as fair or poor (Table 19). The other half (49.5%) reported being in good, very good, or excellent health. Findings were similar to those reported in the Wisconsin migrant worker survey (Slesinger, 1979), but reflect their inferior perceived health status relative to the U.S. population as a whole (NCHS, 1984)

Table 19
Health Status Comparison, Colorado Migrant and U.S. Adult Population
Numbers and Percentages

	Colorado			NHS**
	Numbers	Percentages		Percentages
Excellent	27	8.2 *		44.0
Very Good	24	7.3 *		27.9
Good	112	34.0 (5.7)		21.5
Fair	140	42.6 (4.9)		6.1
Poor	<u>26</u>	<u>7.9</u> *		NA
Total	329	100.0		100.0

**National Health Survey, (NCHS, 1984). Poor and fair were combined in the NHS report.

Usual Place of Care One fourth of the population (25.3%, N=83) did not have a usual place of health care at their permanent residence, slightly higher than the 22.4 percent reported by Mexican Americans and considerably higher than the 14.1 percent reported by Non-Hispanic whites in the preliminary Hispanic HANES report (Carter et al. 1985). For the total sample (N=329), Table 20 displays the places identified. Women (83.3%) were more likely than

men (69.5%) to identify a usual place of care and were more likely (44.4%) to use the migrant clinic than either family males (23.3%) or solo males (4.1%)

Table 20
Usual Place of Health Care at Permanent Residence,
Numbers and Percentages

	Number	Percentage
Migrant Clinic	89	27.2 (5.7)
Community or Rural Health Center	44	13.4 (8.4)
Other Clinic	25	7.6 *
Hospital Outpatient Clinic	39	11.9 (8.8)
Doctor's Office/Clinic	39	11.9 (8.6)
Hospital Emergency Room	7	2.1 *
Other Place	2	0.6 *
No Usual Place of Health Care	83	25.3 *
Total	328	100.0

Of the total sample (N=329), one third (34.2% N=105) utilized a federally-sponsored health facility (migrant health clinic, community health center or health clinic) as a usual place of health care at their permanent residence. However, one fourth ((25.4% N=78) had no usual source of care and one fifth (22.1% N=68) had a permanent residence outside the U.S. (Mexico or Guatemala) where subsidized care may or may not have been available.

Table 21
Utilization of Federally Sponsored Health
Care at Permanent Residence, Numbers and Percentages**

	Number	Percentage
No Usual Source of Care	78	25.4
Usual Source of Care - Mx., Guat.	68	22.2
Homebase Texas - Source of Care	47	15.3
Non-Federally sponsored		
Homebase Other U.S. State - Source	9	2.9
Of Care Non-Federally sponsored		
Homebase Texas - Source of Care	80	26.1
Federally sponsored		
Homebase Other State - Source of care		
Federally sponsored	25	8.1
	307	100.0

**Excludes all respondents whose homebase is Colorado.

More than one half (51.3% N=168) of the migrants interviewed identified Texas as their place of permanent residence. Nearly half (47.6% N=80) of those from Texas reported using federally sponsored resources (migrant health clinic, community health or other health clinics) as a usual source of care (Table 22). However, nearly one fourth of the Texas-based migrants (24.4% N=41) indicated they had no usual source of care.

Table 22
Usual Place of Health Care - Texas Homebase

	Number	Percentage
Migrant Health Clinic	57	33.9
Community Health Center	11	6.6
Other Clinic	12	7.1
Hospital Outpatient Clinic	27	16.1
Dr. Office/Private	15	8.9
Hospital - E.R.	5	3.0
No Usual Place of Health Care	<u>41</u>	<u>24.4</u>
	168	100.0

Use of Health Services in Colorado Over half (52.6% N=173) of the population had used health services in Colorado at some time, and women were more likely than males to report this (chi square <.05). Forty percent (N=133) of the total population identified their usual place of care in Colorado as the migrant health clinic, community health center or other clinic (Table 23). This is congruent with the percentage of migrants using federally-sponsored health services either in Texas or other states. However, it is not known how many of those interviewed subsequently accessed these services in Colorado after the interview process. It is important to note again that in 1986, 34 percent of the adult migrants in Colorado were working and living in the state for the first time.

Table 23
Usual Place of Health Care in Colorado,
Numbers and Percentages

	Number	Percentage
Migrant Health Clinic	128	38.9
Community Health Center	3	0.9
Other Clinic	2	0.6
Hospital Outpatient Clinic	8	2.4
Doctor's Office/Clinic	14	4.3
No Usual Place of Health Care	18	5.5
Never Used Colorado Services	<u>156</u>	<u>47.4</u>
	329	100.0

One third (33.8% N=52) of the migrants who had a usual place of health care in Colorado had heard about the place from the migrant health program outreach worker. The other referrals were distributed fairly evenly among friends (18.2%), relatives (14.9%), crew leaders (11.7%), or other (12.3%). Fourteen (9.1%) had found the place themselves.

Last Medical Visit Of the total respondents, twelve (3.6%) had never had a medical visit. Forty-five percent (N=148) had not received health care in the previous year, a larger proportion than reported for Mexican Americans (31.0%) or non-Hispanic whites (28.3%) in the preliminary Hispanic HANES report (Carter, 1985). Women (74.6%) were more likely than males (42.9%) to have had a medical visit in the past year. Of the entire sample, one fourth (25.6%) had had their last visit one to five years ago. For 55 persons (17.4%), this visit was over five years ago or they couldn't remember when it occurred.

Those who reported having had a medical visit (N=317) identified where the visit had occurred. Forty-three percent (N=136) had seen a provider in Colorado; 32.6 percent (N=103) had had this visit at their permanent residence. Thirty-eight (12%) had seen a provider in some other state. The

remainder (12.4%) had taken place outside the United States. One third of those who could recall their last medical visit related it to illness (36.6%), followed by injury (12.6%), checkup (9.8%), pregnancy care (9.1%) or other (31.9%).

Satisfaction With Care Of those who had a previously medical visit, ninety-four percent (N=294) said they got the care they wanted. The majority (63.1%) stated they were very satisfied with the care received. A small percentage (8.7% N=27) were "not at all satisfied". The other 28 percent (N=88) were somewhat satisfied. Males, especially solo males, were more likely (chi square $p < .05$) to report dissatisfaction with the care received.

Although voicing satisfaction with the care received, over one fourth of those who had a previous medical visit had experienced a problem. The problems identified are summarized in Table 24 in rank order of frequency. Women were more likely to report that the doctor didn't diagnose or treat the condition. Both women and solo males were more likely (chi square $< .05$) to report mistreatment by the doctor or staff than were family males. Whether miscommunication was a factor is not known.

Table 24
Source of Dissatisfaction with Last Medical Visit,
Frequencies and Percentages*

	Frequency	Percentage
Condition didn't improve after treatment	85	27.3 (6.7)
Doctor didn't diagnose or treat condition	77	24.8 (6.9)
Not enough time with doctor	69	22.2 (7.2)
Cost too much	54	17.4 (8.6)
Mistreated by doctor or staff	53	17.0 (8.7)
Had to wait too long	50	16.1 (8.5)
Language problem	25	8.1 *

*Respondents could report more than one problem.

Migrants were asked whether they had experienced difficulties getting medical care at their permanent residence or in Colorado. These responses are listed in Table 25.

Table 25
Problems Accessing Medical Services, at Permanent Residence
and in Colorado, Percentages

	Permanent Residence	Colorado
Care not available	17.3	13.0
Cost	29.1	15.6
Didn't know where to go	11.7	21.6
Didn't have transportation	13.7	17.8
Hours not convenient	17.0	15.1
Had to wait too long for appointment	21.5	12.0
Needed someone to care for children	8.8	15.1
Would lose pay from work	14.8	21.4
Had to wait too long in office/clinic	21.6	11.4
Staff was disrespectful	6.8	3.1
Had no confidence in staff	9.4	6.3
They did not speak Spanish	6.2	9.5
No Hispanic staff at office/clinic	6.5	11.5

Hospitalization Twelve percent (N=39) of the population had been hospitalized during the previous twelve months. A larger proportion of women (20.6%) reported hospitalization than did family males (4.7%) or solo males (9.5%). Number of hospital admissions per person ranged from one to six. The majority (74.4%) had only one admission. The reasons given for the hospitalizations of those who had reported this experience are listed in Table 26, with one third pregnancy-related.

Table 26
Reasons for All Hospitalizations in Past 12 Months,
Numbers and Percentages

	Number	Percentage
Delivery of a baby	20	33.9
Diagnostic Tests	12	20.3
Treatment of a Condition	11	18.6
Accident or Injury	10	17.0
Surgery	6	10.2
Total	59	100.0

Disability or Injury Forty-one (12.5%) of the migrants had spent some time in bed over the past four months. The proportion of women (19.8%) who reported this event was greater than either family males (6.2%) or solo males (10.8%) (chi square < .05). The number of days ranged from one to 60. Forty-five (13.7%) of the total population reported that they had had a previous injury or accident while doing farm labor. Of these, 34 said that the injury had kept them out of work for two more days, data which deserve further investigation.

Table 27
Disability or Injury by Sex Status, Percentages

	Family males	Family Females	Solo Males
<u>Spent Time in Bed</u>			
<u>Over Past Four Months</u>			
Yes	6.2	19.8	10.8
No	93.8	80.2	89.2
	100.0	100.0	100.0
 <u>Injured Doing Farmlabor</u>			
Yes	18.6	7.9	14.9
No	81.4	92.1	85.1
	100.0	100.0	100.0
	(N = 129)	(N = 126)	(N = 74)

SELECTED CONDITIONS

Incidence of Selected Conditions The migrants were asked whether any of a list of 26 conditions bothered them some, very much or not at all, a list which emphasized symptoms rather than complex diagnoses (Slesinger, 1979). The frequencies are listed in rank order in Table 28 beginning with "tooth or gum trouble" experienced by one-half (49.9% N=164) of the population, a problem which is discussed in detail in the "Dental" section.

An unexpected finding of this survey was the number of associations between specific illness conditions and sex and sex status. Women were more likely (chi square $p < .05$) to report low spirits, irritability, headaches, strong anger, allergies, eye trouble, bladder trouble, and anemia. The relationship between many of these symptoms and stress suggests that the migrant life-style presents a large burden for women, a burden which has not been thoroughly investigated. Interviewers described the isolation of the migrant women, their frustrations in attempts to foster their family's welfare despite the irregularities of the weather, wages, crops, and untold other variables. Reported one interviewer, "There's no way out for them."

Other associations (chi square $p < .05$) were found between increased age and eye trouble, arthritis, reported high blood pressure, and diabetes. Headaches were associated (chi square $p < .05$) with eye trouble and dental problems. The interaction between poor field sanitation and digestive problems and bladder problems can only be conjectured.

Table 28
Selected Conditions by Reports of Some or Very Much Bother,
Percentages

	Family Males	Family Females	Solo Males
1. Tooth or Gum Trouble	44.2 (7.3)	48.1 (4.0)	60.8 (4.0)
2. Eye Trouble	40.3 (4.3)	54.0 (3.8)	42.0 (5.20)
3. Headaches	26.4 (5.4)	51.6 (3.9)	31.1 (4.3)
4. Backache	41.0 (4.2)	36.5 (4.6)	25.7 (6.9)
5. Strong Anger	24.8 (5.6)	40.0 (4.4)	23.0 (5.9)
6. Nervousness	26.0 (5.7)	32.5 (4.9)	31.1 (6.2)
7. Irritability	17.8 (6.5)	31.7 (5.0)	21.6 (6.3)
8. Menstrual Trouble	0.0	25.4 (5.7)	0.0
9. Stomach Pains	14.0 (7.9)	23.8 (6.0)	28.4 (6.5)
10. Low Sprits	11.6 (8.2)	30.2 (5.1)	18.9 (7.9)
11. Shortness of Breath	14.7 (7.3)	26.2 (5.5)	18.9 (8.3)
12. Trouble Sleeping	17.1 (7.1)	17.5 (7.6)	16.2 (8.3)
13. Pain in Chest	10.1 (9.5)	20.6 (6.3)	17.6 (6.0)
14. Arthritis	12.4	19.0	13.5
15. Coughing	10.9	16.0	16.2
16. High Blood Pressure	13.2	19.8	5.4
17. Digestive Problems	8.5	15.1	18.0
18. Bladder Trouble	5.4	22.2	10.8
19. Rashes	11.6	12.7	16.2
20. Swollen Joints	9.3	11.9	10.8
21. Allergies	5.4	16.7	9.5
22. Ear Trouble	7.8	11.9	10.8
23. Anemia	3.9	16.7	6.8
24. Diabetes	4.7	4.0	0.0
25. Asthma	1.5	6.0	1.4
	(N=129)	(N=126)	(N=74)

Hypertension A series of questions related to high blood pressure indicated some associations with sex (chi square $p < .05$). Females (77.6%) were more likely than males (46.8%) to have had their blood pressure taken within the past year. Males were more likely (30.5%) never to have had their blood pressure taken than were females ((4.8%). Of the females who had had their blood pressures taken, 21 percent (N=25) had been told that their blood pressure was high and needed either treatment or watching. Eight percent (N=11) of the males who had a previous blood pressure reading had received a similar warning.

Medicine/Vitamin Usage

Herbs

The migrants reported using a variety of herbs, and over-the-counter medicines and vitamins. Over one-fifth (22.6%) were able to identify one of more herbs which they tried for common ailments such as indigestion or headaches. The most common herbs reported were yerba buena and manzanilla tea.

Over-the-Counter Medicines

Over-the-counter medicines most commonly used over the past two weeks were pain relievers (50.2%), eye drops (21.0%), and respiratory medicines (19.1%). Although some of the frequencies were small, higher proportions of women than men reported taking pain relievers (64.3%), laxatives (17.6%), diarrhea medicines (17.5%), and diet pills or diet aids (6.3%). These data become more meaningful in the light of the previous section which revealed that women reported higher incidences of irritability, low spirits, headaches, and strong anger. Increased age was also associated (chi square $p < .05$) with the intake of laxatives. Table 29 shows the frequencies of use for the total population in rank order.

Table 29
Use of Over-the-Counter Medicines Over the Past Two Weeks,
Numbers and Percentages

	Number	Percentage
Pain Relievers	165	50.2 (4.6)
Eye Drops	69	21.0 (7.8)
Cough, Throat, Cold or Congestion Medicine	63	19.1 (7.2)
Vitamins	60	18.2 (9.0)
Indigestion Medicine	52	15.8 (8.9)
Diarrhea Medicine	41	12.5 (9.0)
Laxatives	37	11.2 (9.8)
Diet Pill or Diet Aids	10	3.0
Sleeping Pills, Sedatives, Tranquilizers	9	2.7
Anti-depressants, Stimulants, Pep Pills	4	1.2

DENTAL

Dental information was derived from two sources: the interviews of the total population (N=329), and the dental screenings which were completed by dental clinicians (dentists and dental hygienists) on fifty-two percent (N=172) of the total population. Dental screening was composed of two standardized indices: a periodontal health index (CPITN) and a dental caries status and treatment needs index (DMFT-Modified). This section identifies dental services utilization, service satisfaction, and the results of the dental screenings. Significant dental needs are revealed along with comparisons with other populations which have had dental needs quantified. The conclusion is that the dental needs of the adult migrant farmworkers are immediate, especially in terms of decayed teeth, and exceed those of comparable populations.

Dental Services Utilization . Participants' responses to the length of time since their last dental visit were fairly evenly distributed over the given time intervals of one to 11 months, one to two years, or never, with two or more years (30.5%) being the most common response (Table 30). These results were not associated with age, sex, or education; however, permanent residence was associated (chi square, $p < .05$) with never having visited a dentist. Thirty-five percent of those whose permanent residence was outside the U.S. had never seen a dentist as compared with 18.3 percent of those whose homebase was in the U.S. Table 30 reflects the distribution of responses related to time since the last dental visit and comparisons with other populations. Generally, the migrant population showed a higher prevalence of never having visited a dentist and a lower prevalence of having visited a dentist in the past year than comparable populations.

Table 30
Length of Time Since Last Dental Visit
Comparisons With Other Surveys, Percentages

	Colorado* Migrants	NHS** Hispanics	NHS** Total U.S.
< 12 months	23.5% (6.5)	39.6%	54.2%
12-23 months	22.9% (7.0)	N/A	17.3%
> 24 months	30.5% (5.9)	N/A	25.1%
Never	23.2% (6.8)	8.5%	1.9%

* Colorado Migrant Farmworker Health Survey

** National Health Survey, 1978 - 1980, ages 17-44 years (NCHS, 1984)

Including those who had never been to a dentist, 80.9% (N=266) stated that they did not visit the dentist regularly; 78.7% did not have a usual dentist at their permanent residence. No demographic factors were associated with these findings suggesting that dental care is primarily sought for the treatment of symptoms rather than preventive measures.

Those who had had a prior dental visit (N=252) were generally satisfied with the care received. The frequencies of problems experienced at their last dental visit are displayed in Table 31. The predominant problem was that the care cost too much (23.4%, N=59), reported by males and females alike of all ages.

Table 31
Frequencies of Reported Problems At Last Dental Visit:

	Number	Percent
Cost too much	59	23.4% (5.0)
Little improvement	48	19.0% (5.1)
No diagnosis/treatment	46	18.3% (5.0)
Wait too long	40	15.9% (5.1)
Not enough Dr. contact	38	15.1% (5.4)
Could not communicate	16	6.4%
Mistreated	10	4.0%

(N=252)

Ninety-two respondents (28%) stated that they had used dental services in Colorado at some time in the past. Of those respondents using Colorado dental services, 89.2% (N=82) were satisfied or very satisfied with the care they received and this was not associated with age or sex.

Perceived Dental Needs Fifty percent (N=164) of the total population identified that tooth or gum trouble bothered them "very much" (20.7%, N=68) or "some" (29.3%, N=96). This was the problem identified most frequently among a list of 26 common conditions (Table 28). Those who were bothered by tooth or gum trouble were more likely (chi square, $p < .05$) to state that they needed dental work at the time of the survey (95.1%, N=156) than those who were not bothered by this condition (54.9%, N=90). Of all the survey respondents (N=329), 75% felt they needed dental work at the time of the survey. The specific treatments reported needed are identified in Table 32.

Table 32
Perceived Dental Needs of All Respondents,
Numbers and Percentages

	Number	Percentage
Cleaning	218	88.3 (4.5)
Fillings	168	67.5 (7.2)
Extractions	130	52.4 (10.4)
Teeth replaced	81	24.6 (5.1)
Teeth straightened	34	13.7 (6.5)
Dentures (partial/full)	16	6.5

Of those who stated they needed dental care (N=246), "cost" was the most frequent response given as the main reason for not seeking care at that time (43.8%, N=109), followed by "no time to seek care" (18.9%, N=47) and "did not know where to go" (8.4%, N=21).

Dental Screening: Periodontal Health The CPITN is the Community Periodontal Index of Treatment Needs which was developed by WHO for rapid assessment of the mean periodontal disease status (degree of gum disease) of a population as

well as the prevalence of periodontal disease involvement. Data collected in this index are restricted to bleeding, calculus, and pocketing as identified through the use of a periodontal probe. From the periodontal health index (CPITN), an overall mouth score (periodontal disease score) for each screened participant (N=172) was derived, with classification based on the highest (worst) score in any sextant (one of six areas of the mouth). The scores are listed in Table 33. One person who was screened had no teeth and is not included in this portion of the analysis. Of the remaining 171 persons screened, 100% had at least one sextant which bled upon probing (probe inserted in the space between the tooth and gum); 80.7% (N=138) had at least one pocket of 4-5 mm; 23.4% (N=40) had at least one pocket of 6 mm or deeper. No participant had completely healthy tissues, defined as no bleeding and no calculus less than or equal to 3 mm on probing.

Table 33
Periodontal Health Index - Overall Scores,
Numbers and Percentages

Classification	Number	Percentage
Without disease (healthy)	0	0.0
Bleeding only (gingivitis)	5	2.9
Calculus (no pockets) (gingivitis)	28	16.4
4-5 mm pockets (periodontitis)	98	57.3
6+ mm pockets (periodontitis)	40	23.4
	<u>171</u>	<u>100.0</u>

Dental Screening: Caries Status

Only nine people (5%) had completely sound dentitions (no caries, restorations, or missing teeth). Only twelve percent (N=21) of the population had no decay, while 73% (N=126) of the participants exhibited three or more decayed teeth (Table 34). Females (40.9%) were more likely (chi square, $p < .05$) to have fillings than males (26.4%). Over half (53% N=91) of those screened were missing one or more teeth; one person was missing all 28 teeth. Age was associated with missing teeth (chi square, $p < .05$). A summary of the

frequencies and percentages of decayed, missing and filled teeth identified on screening is found in Table 34. Summary statistics related to the Caries Index are found in Table 35.

Table 34
Dental Screening: Identification of Dental Problems,
Numbers and Percentages

	Number	Percentage
<u>Decayed teeth</u>		
None	21	12.2
1-2	25	14.5
3-8	86	50.0
9 or more	<u>40</u>	<u>23.3</u>
	172	100.0
<u>Missing teeth</u>		
None	81	47.1
1-36	62	36.0
4 or more	<u>29</u>	<u>16.9</u>
	172	100.0
<u>Fillings</u>		
None	117	68.0
1-2	29	16.9
3 or more	<u>26</u>	<u>15.1</u>
	172	100.0

Table 35
Dental Screening Caries Index Summary, Statistics

	Mean (SD)	Median	Mode	Range
Sound	19.4 (5.5)	20	19	0-28
Decayed	5.5 (4.2)	5	0	0-22
Missing	1.8 (3.2)	1	0	0-28
Filled	1.2 (2.6)	0	0	0-18
DMF	8.6 (5.5)	8	6	0-28

(N = 172)

* Includes 1 person missing all 28 teeth.

Treatment Needs The treatment needs - fillings, extractions, and replacements of non-restorable or missing teeth - were identified, based on the classification and extent of the caries status. Summary results are found in Table 36. The mean number of teeth per respondent needing restorations (fillings) was five, and the mean number of teeth per respondent needing to be replaced was 1.5. Only seventeen people (9.9%) needed no treatment on any of their teeth; in that group, the one person who was missing all 28 teeth had a good, working denture and needed no treatment. Thirty-two people (18.6%) had one or more teeth which needed to be extracted.

Table 36
Treatment Needs: Restorations, Replacements
and Extractions, Numbers and Percentages

	Number	Percentage
None	17	9.9
Restorations (fillings)	150	87.2
Replacements	78	45.3
Extractions	32	18.6

(N = 172)

PESTICIDE EXPOSURE

Risk Factors Pesticides pose special hazards for migrants because of their roles in 1) the handling of pesticide-coated fruits and vegetables, 2) their presence in the fields during or soon after large scale applications or drift, and, 3) their occasional involvement in mixing or applying the chemicals. Migrants are often unaware of these exposure situations and, if symptoms do occur, they may not associate them with pesticides.

For most of the migrants, over half the year was spent working in agriculture and potentially in contact with pesticides. Females worked fewer months in the fields than family males or solo males (chi square $p < .05$). Table 37 displays the work history for the entire population. Table 38 reflects the frequencies of personal activities which present additional risks related to pesticide exposure.

Table 37
Months Per Year Involved in Farm Labor, Statistics

	N	Mean	Mode	Median	Range
Family Males	129	8.0	12.0	8.0	1-12
Family Females	126	5.6	4.0	5.0	1-12
Solo Males	<u>74</u>	7.5	12.0	7.0	1-12
Entire Population	329	7.0	12.0	7.0	1-12

Table 38
Personal Activities Related to Pesticide Exposure,
Numbers and Percentages

	Number	Percentage
Eat Meals Near Fields	278	84.5 (5.0)
Wash Hands with Well Water in Field	74	22.5 (5.1)
Wash Hands with Irrigation Water	62	18.8 (5.0)
Drink Water from Wells in Fields	49	14.9 (5.1)
Drink Irrigation Water	14	4.3 *

Pesticide Contact Direct contact with pesticides was reported by one third (33.1%) of the migrants in response to the question if pesticides had ever been applied to an area while they were working it. The frequencies are presented in Table 39.

Table 39
 Number of Times Pesticides Ever Applied in Area While Working,
 Numbers and Percentages

	Number	Percentage
None	205	62.3 (9.3)
1-2 times	38	11.6 *
3-5 times	33	10.0 *
6-10 times	10	3.0 *
More than 10 times	17	5.2 *
Don't know	26	7.9 *
Total	98	100.0

Some migrants (12.2%) were involved in mixing, handling and/or applying pesticides and these were more likely to be solo males. Of special concern are the 13 percent (N=44) who had had pesticides spilled or sprayed on them sometime in the past. Of these 44 persons, over one fifth (22.7% N=10) believed that they had become ill because of the exposure. Unfortunately, symptoms related to pesticide exposure can be attributed to many causes and are often not associated with the real agent. Of those 44 persons who had had pesticides spilled or sprayed on them, only four (9.1%) had sought medical attention for symptoms associated with the incident. Of these four, three were solo males; one was a family male.

ACCESS TO FOOD

Forty-three percent (N=65) of the families and 67.8 percent (N=46) of the solo males reported difficulty getting good food while away from home. While the specific factors were not explored in this survey, they are well known: poverty, unemployment, mobility, lack of transportation, lack of cooking facilities and refrigeration, and ever-present insects and rodents.

Table 40
Difficulty Getting Good Food Away From Home by
Families and Solo Males, Numbers and Percentages

	Families		Solo Males	
	Number	Percentage	Number	Percentage
Yes	65	42.8 (8.8)	46	62.2 (13.1)
No	87	57.2 (7.3)	28	37.8 (18.4)
Total	<u>152</u>	<u>100.0</u>	<u>74</u>	<u>100.0</u>

Forty percent (N=61) of the families and 58 percent (N=43) of the solo males reported running out of money to buy food over the past twelve months (Table 41). Of those who ran out money to buy food, a higher proportion of solo males (67%) than families (47%) reported that this occurred at their homebase (chi square $p < .05$). However, the situation was reversed in Colorado with a higher proportion of families (77%) than solo males (54%) experiencing this crisis.

Table 41
Ran out of Money for Food During Past Twelve Months,
Families and Solo Males, Numbers and Percentages

	Families		Solo Males	
	Number	Percentage	Number	Percentage
Yes	61	40.1 (9.3)	43	58.1 (13.8)
No	91	59.9 (7.2)	31	41.9 (15.8)
Total	<u>152</u>	<u>100.0</u>	<u>79</u>	<u>100.0</u>

One-third (33.6%) of the families and 42 percent of the solo males reported that they ate less than they should at least three to four times a year because there was not enough food for the whole family (Table 42). Furthermore, many of the migrants believed that their health had been hurt by having too little food or the wrong kind of food. Over a fourth (26.3%) of the families and a third (39.2%) of the solo males had this concern.

Table 42
How Often Families and Solo Males Ate Less
Than They Thought They Should,
Numbers and Percentages

	Families		Solo Males	
	Number	Percentage	Number	Percentage
Daily	3	2.0	1	1.4
1-2 Times per Week	12	7.9	8	10.8
1-2 Times per Month	20	13.2	10	13.5
3-4 Times per Year	16	10.5	12	16.2
Rarely or Never	101	66.4	43	58.1
Total	152	100.0	74	100.0

Access to Food Programs There were differences (chi square $p < .05$) in the proportions of families and solo males who had accessed food programs over the past 12 months (Table 43). The primary eligibility requirements for the programs varied as follows: the Food Stamps Program requires proof of citizenship; the WIC Program and Commodity Supplemental Food Programs are limited to pregnant, post partum, or breast-feeding women, and children under age five years and six years respectively. Food Stamps, food banks or free food were the only resources for the solo males who had no children.

Table 43
Food Program Enrollment of Families and Solo Males,
Numbers and Percentages

	Families		Solo Males	
	Number	Percentage	Number	Percentage
<u>Food Stamps</u>				
Yes	114	75.0 (6.4)	6	8.1 *
No	38	25.0 (12.0)	68	91.9 (10.4)
Total	152	100.0	74	100.0
<u>WIC Program</u>				
Yes	70	46.1 (8.6)	1	1.4 *
No	82	53.9 (7.7)	73	98.6 (10.0)
Total	152	100.0	74	100.0
<u>Commodity Supplemental Foods</u>				
Yes	46	30.3 (10.0)	4	5.4 *
No	106	69.7 (6.6)	70	94.6 (10.2)
Total	152	100.0	74	100.0
<u>Food Bank/ Free Food</u>				
Yes	47	31.1 (10.0)	10	13.5 *
No	104	68.9 (6.7)	64	86.5 (10.8)
Total	151	100.0	74	100.0

At the end of the interview, all respondents were asked to identify what they would do with an extra ten dollars (\$10.00). In terms of food and hunger, their responses are significant (Table 44). Over one-half (55.9%) of the families would spend the money on food; over two-thirds (66.2%) of the solo males would buy food. For most of the migrants, food was a basic need which often went unfulfilled.

Table 44
How Would Spend an Extra Ten Dollars

	Number	Percentage
Food	187	56.9
Save it	47	14.3
Gas	30	9.1
Clothing	26	7.9
Medical care	4	1.2
Entertainment	5	1.5
Other	26	7.9
Don't know	4	1.2
	329	100.0

REPRODUCTIVE HISTORY OF WOMEN

Ninety-five percent (N=120) of the women interviewed had had a pregnancy and, for purposes of this study, were categorized as "ever-pregnant". For these women, the mean number of pregnancies was 4.9. For those women reporting a live birth, the mean number of living children was 4.2 (Table 45).

One third (32.5%) of the total ever-pregnant women (N=120) had had at least one miscarriage or abortion. There was no attempt to distinguish between induced and spontaneous abortions or miscarriages. The number of miscarriages or abortions ranged from one to five. Nine (7.5%) of the ever-pregnant women had had stillbirths. Twenty-one women (17.5%) had experienced the tragedy of a child dying. Fifteen women (12.5%) reported that they had had a child die during the first year of life (infant mortality); five women (4.2%) had a child die during the first month of life (neonatal mortality). Fetal mortality (miscarriages, abortions and stillbirths), infant and neonatal mortality statistics are summarized in Table 46.

Major differences existed in the reproductive histories of the women under age 35 years and those age 35 years or over. These data are displayed in Tables 45, 46, 47. Seventy-seven percent (N=40) of the 52 older women had had five or more pregnancies (Table 46). Sixty-nine percent (N=36) of the older women had had five or more live births (Table 47). Over one-third (36%) reported at least one miscarriage or abortion and 13.4 percent (N=7) had had two or more (Table 48). The data become even more compelling when considered along with ideal number of children and whether the last pregnancy was wanted, data discussed in the next section. By any definition, the women age 35 years and over were high risk for fetal, infant or maternal morbidity and mortality and needed to be identified for family planning counseling.

Table 45
Pregnancies and Live Birth, All Ever-Pregnant Females,
Statistics

	Mean	Mode	Median	Range
Number of Pregnancies	4.9 (0.5)	5.0	4.5	0-13
Live Births	4.2 (0.5)	3.0	4.0	0-13
Living Children*	4.2 (0.5)	2.0	4.0	1-13

*Statistics for women reporting live births.

Table 46
Number of Pregnancies, All Ever-Pregnant Females,
by Age Groups, Numbers and Percentages

	18-34		35 and Over	
	N	%	N	%
1	12	17.6	0	0
2	16	23.6	3	5.8
3	12	17.6	4	7.7
4	8	11.8	5	9.6
5	11	16.2	11	21.2
6 or more	<u>9</u>	<u>13.2</u>	<u>29</u>	<u>55.7</u>
	68	100.0	52	100.0

Table 47
Number of Live Births, All Ever-Pregnant Females
by Age Groups, Numbers and Percentages

	18-34		35 and Over	
	N	%	N	%
0	5	7.4	0	0
1	14	20.6	0	0
2	14	20.6	4	7.7
3	14	20.6	5	9.6
4	11	16.1	7	13.5
5	3	4.4	12	23.1
6 or more	<u>7</u>	<u>10.3</u>	<u>24</u>	<u>46.1</u>
	68	100.0	52	100.0

mean: 2.8

mean: 6.1

Table 48
Fetal and Infant Mortality, All Ever-Pregnant Females,
Numbers and Percentages

	Total Population		18-34		35 and Over	
	N	%	N	%	N	%
<u>Ever had Miscarriage/Abortion</u>						
Yes	39	32.5 (14.6)	20	29.4	19	36.5
No	81	67.5 (9.5)	48	70.6	33	63.5
Total	120	100.0	68	100.0	52	100.0
<u>Ever had Stillbirth</u>						
Yes	9	7.5 (34.6)	6	8.8	3	5.8
No	111	92.5 (3.1)	62	91.2	49	94.2
Total	120	100.0	68	100.0	52	100.0
<u>Ever had Infant Death</u>						
Yes	15	12.5 (25.4)	6	8.8	3	5.8
No	105	87.5 (8.4)	62	91.2	43	82.7
Total	120	100.0	68	100.0	52	100.0
<u>Ever had Neonatal Death*</u>						
Yes	5	4.2 (25.4)	3	4.4	2	3.8
No	115	95.8 (8.3)	65	95.6	50	96.2
Total	120	100.0	68	100.0	52	100.0

*A subset of Infant Deaths.

FAMILY PLANNING

In 1985, the Colorado Migrant Health Program conducted extensive research in the United States and Mexico to identify effective strategies for the delivery of accessible, acceptable, affordable family planning services to migrants of Mexican culture (Littlefield, Stout & Ramirez 1986). Officials in Mexico described their success in fulfilling a national mandate to reach both urban and rural populations with family planning information and services, an effort which included health practitioners at all levels, schools, employers, and extensive coverage in the media. The Colorado Migrant Health Survey documents the interest which sexually active migrant farmworkers, predominantly of Mexican culture, have in family planning as well as their utilization of contraceptive methods. It also reveals the extent to which trained community personnel and medical personnel, other than a physician, would be acceptable as providers of services.

Reproductive Preferences Contrary to commonly held stereotypes, the mode and median response for males and females to the question of ideal number of children was 3.0 (Table 49). Family males and family females were similar with means of 3.6 and 3.5 respectively. The solo males, a younger group comprised of more single persons, had a smaller mean (3.3) and range (1-7). In terms of whether their last pregnancy was wanted, 22.7 percent of the sexually active women said no (Table 50). Of special interest is the disparity between the ideal number of children (4.0) reported by women 35 years and over, and their live births (mean: 6.1, mode: 5.0, and median: 5.0). Furthermore, when asked the question whether their last pregnancy was wanted, 30.8 percent (N=16) of these women said no. An opportunity for effective family planning had been missed and, for many of these women, the dilemma would recur unless immediate intervention occurred.

Table 49
Ideal Number of Children of Sexually Active
Respondents, Statistics

	Number	Mean	Mode	Median	Range
Family Males	122	3.6 (0.2)	3.0	3.0	1-21
Family Females	123	3.5 (0.5)	3.0	3.0	1-12
Solo Males	65	3.3 (0.6)	3.0	3.0	1-21

Table 50
Report of Last Pregnancy Wanted by Sexually
Active Respondents, Percentages

	Family Males	Family Females	Solo Males
<u>Last Pregnancy Wanted</u>			
Yes	83.0 (7.8)	77.3 (8.2)	88.2 (8.2)
No	17.0 *	22.7 *	11.8 *
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Contraceptive Use Over half of the sexually active family males and females reported that they or their partner used some method of contraception (Table 51). The methods of all sexually active women are enumerated in Table 52. Sterilization was the preference for women who had completed their families. Oral contraceptives were the method most used by women who wanted a temporary method or who could not afford the surgical intervention of sterilization. In a previous investigation (Littlefield & Stout, 1985), older women complained that no one had introduced the topic of family planning until they had had over six children. Indeed, of the 45 sexually active women not currently using family planning, nine (20%) were pregnant and 14 (31%) reported the desire to use a method of contraception.

Table 51
Contraceptive Use Status of Sexually Active Respondents
Percentages

	Family Males	Family Females	Solo males
Currently using	59.7 (9.1)	63.4 (8.8)	49.2 (10.9)
Not Currently Using	40.3 (10.5)	36.6 (11.6)	50.8 (17.5)
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
	(N = 112)	(N = 119)	(N = 34)

Table 52
 Contraceptive Methods Currently Used by Sexually Active Women
 Numbers and Percentages*

	Number	Percentage
Sterilization	29	23.6
Oral Contraception	30	32.3
IUD	5	5.4
Injection	1	1.1
Condom	6	6.5
Foam, Jelly	3	3.3
Diaphragm	1	1.1
Withdrawal	5	5.4
Other	1	1.1

*Multiresponse, 3 women reported more than one method.

Those sexually active women who were using contraception were asked who had made the decision to use family planning. For over half (57.1%), it had been a joint decision made by them and their partner. Twenty-nine percent had made the decision for themselves; their partners made the decision for 11.7 percent.

Service Provider Preferences Users of temporary methods were asked for their gender preference for family planning service providers. Women were more likely (chi square < .05) to prefer females, while males were more likely either not to have a preference or to prefer a male (Table 53). Over half of these men and women would accept services from a medical person other than a physician and from a trained person in the community (Table 54).

Table 51
Gender Preferences for Family Planning Service
Providers, Sexually Active Respondents,
Percentages

	Family Males	Family Females (excludes sterilized)	Solo Males
<u>Prefer Services from</u>			
Male	26.4 (14.6)	3.2	15.9
Female	20.7 (16.1)	70.2 (9.1)	9.5
Doesn't Matter	<u>52.9 (9.3)</u>	<u>26.6 (18.6)</u>	<u>74.5 (7.2)</u>
	100.0	100.0	100.0
	(N = 121)	(N = 94)	(N = 63)

Table 52
Attitudes Related to Family Planning Service
Providers, Sexually Active Respondents,
Percentages

	Family Males	Family Females (excludes sterilized)	Solo Males
<u>Accept Services from</u> <u>Medicial person other</u> <u>than physician</u>			
Yes	56.9 (10.2)	72.9 (9.3)	50.8 (8.2)
No	17.9	22.8 (18.1)	19.0 (12.9)
Don't care	<u>25.2 (13.3)</u>	<u>4.3</u>	<u>30.2 (1.6)</u>
	100.0	100.0	100.0
	(N = 123)	(N = 92)	(N = 63)

	Family Males	Family Females (excludes sterilized)	Solo Males
<u>Accept services from a</u> <u>trained person in the</u> <u>community</u>			
Yes	61.3 (8.60)	66.0 (9.7)	50.8 (8.4)
No	36.3 (12.1)	31.9 (15.0)	42.5 (10.4)
Don't know	<u>2.4</u>	<u>2.1</u>	<u>7.7</u>
	100.0	100.0	100.0
	(N = 123)	(N = 94)	(N = 63)

CONCLUSIONS AND RECOMMENDATIONS

Migrant farmworkers are among the most deprived of America's working poor today. Despite efforts by the Office of Migrant Health, Bureau of Community Health Services Delivery and Assistance (BCHDA), Department of Health and Human Services, their access to health services is still problematic. Upstream states such as Colorado have the responsibility of being the primary provider of health services for migrants who either have no source of health care at their homebase or experience a variety of barriers in their attempts to access services. This has implications for allocation of limited funds by the Office of Migrant Health and for clinicians attempting to define standards regarding continuity of care for this special population. Areas which require policy revisions, based on this study's findings, include program management and the exercise of authority, reproductive health/family planning, dental care, and hunger. Conclusions and recommendations for each need are presented along with recommendations. These recommendations are based upon the assumption that future funding will, in the best case, remain fixed and, in the worst case, decrease. Given this assumption, limited resources must be strategically targeted to demonstrated rather than conjectured needs, must be deployed in a timely and efficient manner, and must be evaluated based upon predetermined criteria.

Utilization of Services Study findings indicate that only 34 percent of Colorado's migrant adults utilize federally financed services (Migrant/Community Health Centers, other clinics) at their homebase. It is not axiomatic that reallocating resources from upstream to downstream migrant health grantees will increase utilization for Colorado's migrants - 28 percent are homebased outside the United States; many do not reside within catchment areas served by current

federal grantees, and of those that do, many choose not to utilize services due to barriers associated with cost, waiting time, language, and mistrust/lack of confidence in health practitioners.

Recommendations.

1. Replicate the Colorado Migrant Farmworker Health Survey in selected upstream and downstream states. Given that the development costs will not have to be duplicated, (i.e. questionnaire developed and translated, sample selection methodology developed, analytical methods tested), the cost of this replication would be minimized. This approach would allow for the development of funding allocation strategies that are based on current needs and understanding of the target population.
2. Suspend current Office of Migrant Health plans to allocate funds for 1988 based upon the current Needs/Demand Assessment/State Profile Process. The latter was implemented in 1986 to develop a funding formula based on a quasi migrant "count". This process, if implemented, will seriously undermine the upstream infrastructure and would remove the only source of health care currently available to the majority of upstream migrant farmworkers. At the same time because there is insufficient information available at homebased sites about access, additional funds to current downstream grantees would not be strategically targeted.
3. Suspend allocation of Migrant Health funds for Special Initiatives, hospitalization, and sole source contracts to individuals and organizations. Utilize currently available funding for primary care services until such time as the Office of Migrant Health has available an accurate patient-centered data base from which to establish priorities.

4. The Bureau of Community Health Services Delivery and Assistance (BCHDA) must monitor and adhere to internal policies regarding timely allocation of funds. Currently, thoughtful, professional planning efforts are hampered at the project level by the inability of Regional Offices to allocate funds until late in the grant period. Operational budgets are continually allocated in an uncertain, piecemeal fashion with final figures established late in the funding cycle. In 1986 and 1987, Special Initiative decisions in most regions came too late in the program year for projects to be initiated in the year for which Congress allocated the funds.

Family Planning/Reproductive Health Almost 60 percent of the women age 35 years and over had had five or more live births; 36 percent reported at least one miscarriage or abortion; 17 percent had had an infant die during the first year of life. For 31 percent of the women age 35 years and over, their last pregnancy was unwanted. Indeed, the ideal number of children reported by these older women was 4.0 (mean) and 3.0 (median). One fifth of all the women interviewed reported that their last pregnancy was unwanted. The ideal number of children identified by men was 3.6 (mean) and by women was 3.5 (mean). However, the average number of live births reported by the women was 4.2. Most of the women preferred to receive family planning services from a female but this person could be someone other than a physician and could also be a trained person in the community.

Recommendations.

1. Promote and fund comprehensive family planning and reproductive health services for migrant farmworker women and their partners with special focus on those at risk (closely spaced pregnancies, four or more births, age 35 or over) to include all medically approved and appropriate methods. Special emphasis must be placed on targeting and involving males in reproductive

health decisions and services.

2. Incorporate trained family planning promoters in the migrant health delivery system to provide family planning education, non-prescription methods, and facilitate access to culturally sensitive clinical services and methods when indicated.

3. Increase the utilization of midlevel providers (nurse practitioners, physicians' assistants, and child health associates) to provide family planning clinic services, including counseling, distribution of contraceptives, and training of health promoters.

Dental Health The Office of Migrant Health has traditionally emphasized preventive services for children. This priority is justified given the constraints of limited funds available for dental services. However, the success of any program aimed at improving the dental health of children without incorporating the parents' support and modeling is questionable. The adult population surveyed, although relatively young, had extensive dental disease, a problem which is not self-limiting as are some medical problems. Twenty-three percent had never been to a dentist; not one person was without some degree of periodontal disease, a finding unrelated to homebase. Seventy-three percent had three or more decayed teeth; over half were missing one or more teeth. The major barrier to dental care was cost.

Recommendations.

1. Maintain existing, successful models of restorative dental care for adults.
2. Increase access to services in non-traditional settings (clinics, schools, mobile vans, migrant camps).
3. Increase use of ancillary personnel to provide services, especially dental hygienists, and encourage broadening of dental practice acts to allow fuller utilization of dental hygienists.

Hunger.

Many of those interviewed reported running out of money to buy food over the past year or eating less food than they should because there was not enough food for the whole family. Although not well investigated, chronic, marginal food deprivation could have serious, lasting consequences related to health, psychological well-being, and productivity. Even with existing food programs, many of the migrants are not getting enough to eat.

Recommendations.

- 1 Maintain outreach programs and increase enrollment and participation in the available food programs both upstream and downstream.
2. Encourage migrant health programs to provide leadership in the development of alternative food resources, including food banks, gleaning projects, and cooperatives.

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