Published in final edited form as:

J Agromedicine. 2012 ; 17(4): 377–385. doi:10.1080/1059924X.2012.713843.

Midwest Growers' Mail Survey of Contributors to Migrant Health and Nutrition

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Abstract

The purpose of this study was to solicit information from farm owners (growers), as representatives of their farm businesses, regarding descriptive information on migrant camp housing that may contribute to the health and nutritional status of employed workers and their families. This cross-sectional descriptive mail survey was sent to 802 growers in Indiana, Michigan, Ohio, and Pennsylvania via the US Postal Service. The growers were identified by an Internet search for licensed agricultural work camps in Midwest departments of agriculture. Response rate was 34%. Overall, growers reported a median of one migrant camp with 23 residents, employing workers seasonally for either 10 weeks or 6 months, with seven accompanying children on site. Individual kitchen appliances varied across the states, potentially influencing the preparation of healthy meals. Three themes were identified from the results. First, over one third of owners lacked or had limited knowledge about the health services available to migrant families. Second, migrant workers may have limited access to a variety of fresh produce for household meal preparation. Third, migrant children were unable to easily access public play areas, and families lacked recreational spaces in agricultural work camps. Play areas in migrant camps were mostly identified as open fields with little play equipment on site. Knowledge learned can influence future agricultural camp practices and the design of future research studies, and provide direction for grower education topics presented at agricultural conferences and by extension services.

Keywords

Agriculture; migrant; minority health

INTRODUCTION

Published research links childhood ailments to adult experiences, and studies show that migrant children have higher risks of the development of physical and mental health problems.^{1–3} Studies have shown that Mexican American adults and children have disproportional rates of diabetes, acute otitis media, upper respiratory tract infections, viral and parasitic infections, and dermatitis, along with increasing prevalence of unhealthy weight.^{4,5} These migrants who contribute to the agricultural work force represent families with intergenerational transmission of poverty with subsequent challenges to maintaining good health. Yet, the work efforts of these migrants contribute to the health of all US

families. Understanding their environment can help support efforts to improve the health of migrant families and their children and subsequently support safer US foods.

A review of the literature found limited numbers of reports that solicit farm owners' opinions and ask for information specific to their work. Farm owners (growers) have participated in surveys on attitudes in a study on farmers' awareness of weed management and safety practices.⁶⁻⁸ Owners have also responded to mail surveys inquiring where farm managers search for information on better production practices that indicated where efforts need to be developed to improve information communication.⁹ The perceptions of farmers on pesticide safety and chemical exposure have been studied more frequently, especially by the Quandt and Arcury¹⁰⁻¹³ research teams, and results have identified gaps in owners' and workers' knowledge. Recently, surveys were distributed to members of the National Council of Agricultural Employers and the Washington Growers League to learn the attitudes of growers who employ adolescent workers.¹⁴ Results highlighted the barriers to employing adolescents in seasonal farm work and provided information on future needs in safety training resources. No published survey data from growers were found on characteristics of camp conditions that included information on their residents, physical location and convenience to food markets, presence of recreational space and equipment, and proximity to health care facilities. No published reports were found on survey data examining potential contributors to the levels of migrant workers' and their families' health and nutritional status.

Study Purpose and Research Questions

The purpose of this study was to solicit information from growers in Indiana (IN), Michigan (MI), Ohio (OH), and Pennsylvania (PA), as representatives of their farm businesses, regarding descriptive characteristics on migrant camp housing that may contribute to the health and nutritional status of employed workers and their families. Migrant agricultural workers are commonly defined as persons who travel at least 75 miles during a 12-month period for employment of a seasonal or temporary nature, and are required to be absent from their permanent place of residence.¹⁵

The research questions were (1) What are some characteristics of farms and amenities of the migrant camps? (2) What health promotion measures are supported by growers for their employees and their children? (3) Are there differences in survey findings across four (IN, MI, OH, and PA) Midwest states?

METHODS

Procedure

Dillman Mail Survey Research Methodology,¹⁶ the tailored design method, was adopted, as it employs a scientific approach to reduce survey error. Dillman's methodology was used to guide the design of the cover letter, survey, mailing and response envelopes, recipient and return address labels, reminder postcards, and mailing schedules. Information was sought on contributors to health, nutrition, and health promotion opportunities available to the migrant workers. Using formative research, a survey was developed that asked growers who employed migrant workers questions about the characteristics of their farms and the migrant camps; supportive business practices to promote health; and their knowledge of the health of their workers. Also included were questions regarding the neighborhood or environmental recreational resources for children (available playground equipment), distance from school or public play yards and grocery stores, and local availability to purchase Hispanic foods. Survey questions were also suggested by the literature, and guided by works of Aday and Cornelius.¹⁷ A senior scientist with expertise in mail survey data collection was consulted to

minimize measurement error due to poor question wording, poor survey design, or questionnaire layout. Survey booklets and reminder post cards were printed at the university printing office. There were mass mailings on Tuesdays distributed by the US Postal Service (USPS). A personalized cover letter explained the purpose of the study and asked the farm owner(s) to respond. The survey was accompanied by a new \$1 bill as a token of a financial incentive to encourage participation, accompanied by a stamped self-addressed envelope. Also, included were a separate letter and a second stamped self-addressed envelope for returning contact information that asked if the grower would be interested in having nurse research teams deliver free culturally appropriate health promotion education to workers in the camps. Due to the volume and labor involved in preparing the survey packets, each state was mailed separately with 1 week's time lapse between mailings. Noncoverage errors were managed by mailing surveys to all growers in the four Midwest states who maintained migrant camps. Approximately 2 weeks later a reminder post card was sent and included contact information in case there was a need to mail a replacement questionnaire. This second mailing would not include the \$1 incentive, but no second surveys were requested from targeted recipients. Due to the restrictions of the grant budget, the relentless approach recommended by Dillman et al.¹⁶ to maximize survey participation was limited to one reminder notice. The research project was approved through the Case Western Reserve University Institutional Review Board expedited review process.

Setting and Sample

This was a cross-sectional descriptive survey. The target population was farm businesses in IN, MI, OH, and PA that were identified by an Internet search of businesses having a state license to operate housing units (agricultural labor camps) for migrant workers. In 2009, the US Department of Agriculture data showed approximately 250,000 farms in these four states, but multiple farms with one owner were not eliminated in the total count, and not all farm owners included had licenses for migrant housing.¹⁸ Where the original Internet search results included several camps owned by the same grower, only one survey packet was sent to each grower. Survey packets were sent to 802 growers. The completed sample size needed for a population of 800 with a $\pm 5\%$ margin of error at a 95% confidence level for a 50/50 split (the most conservative assumption about variance) was 260.¹⁶

RESULTS

Characteristics of Growers and the Farm Businesses

The number of surveys returned was 275. The overall survey response rate was 34% (IN 36%, MI 33%, OH 39%, PA 28%). This included some respondents who wrote personal letters to the researcher via USPS mail or e-mail. Seventeen respondents returned the \$1 bill, but no survey information. Eleven respondents returned the \$1 bill with the survey completed. Not all responding growers answered all survey questions, but no patterns of missing data were noted. The survey informants were 75% male, 88% non-Hispanic, with only 2% self-identifying as Hispanic. Racial identity was self-reported as 90% white. Thirty-eight percent of the growers perceived their role to the migrant worker employees as a business-like employer, with 3% saying it was either authoritative (boss-like) or humanitarian (father figure), and 53% said they perceived their role as a combination of employer, boss, and father figure. Growers were asked if they felt knowledgeable about the various health services available to migrant workers. Sixty-four percent stated they felt knowledgeable about services available to migrant workers. There was a significant difference in crops grown ($n = 233$, $\chi^2 = 25.7825$, $p = .002$, $df = 9$), with MI having the largest percentage of farms growing only fruits (51%), OH having the largest percentage of farms growing only vegetables (45%), and IN having the largest percentage of farmers growing neither fruits or vegetables (27%).

Characteristics of Employed Migrant Workers

Ninety percent of growers employed migrant workers to assist in crop maintenance and harvest. Other owners operated equine or landscaping businesses. Thirty percent of migrant workers employed by growers were men only. Table 1 illustrates characteristics of migrant workers and migrant camps in the four states: the number of migrant workers employed, the workers' periods of employment, number of migrant camps, and number of children in those camps by total sample and by states. Whereas the median value for number of employees was 23 living in one migrant camp, the high outlier reported employment of 600 workers with 23 camps. The growers responded that 57% of their workers had families with accompanying children, and whereas the median number of children in camps was 7, one grower reported it seemed like there were "hundreds" of children in his various migrant camps.

Factors Contributing to the Health and Nutrition of Migrant Workers

Growers were asked questions about the characteristics of the migrant camps that included kitchen facilities, the distance to grocery stores for food procurement, the ability to purchase Hispanic foods, access to food wagons for lunch meals, and presence of a farmer's market on the premises. Seventy-two percent of families have their own refrigerator and stove, and 26% shared kitchen appliances with others. Ninety-one percent of nearby larger supermarkets sold Hispanic foods compared with 70% of local smaller grocery stores. The distance to facilities for food purchases was a median of 3 miles to small grocery stores (range of 0.25–15) and 5 miles to a larger store (range 0.5–25). Few migrant workers had access to daily lunchtime food wagons (8%), or only occasionally (12%). Migrant workers were permitted to take home any amount of picked produce by 60% of owners, and 27% said they could take home harvested produce, but in restricted amounts. The ability to purchase fresh produce from an on-site farmer's market was possible on 25% of the farms.

Forty-five percent of growers provided, permitted, or supported health promotion measures for the migrant workers and their families. Those 97 owners who responded affirmatively were asked to further clarify by a write-in space the health care services that migrant workers were able to access. Responses included 16 owners who noted nearby migrant health clinics, 14 owners who permitted mobile vans in the migrant camps, five farms with on-site migrant clinics, 8 owners who used local health care professionals, and 16 owners who reported an assortment of occasional health clinics, immunization clinics, or health promotion services offered by public or private agencies including local and distant church groups.

Factors Contributing to the Health of Migrant Workers' Children

The number of children living in migrant camps varied. Of those children, 79% of growers reported that the children attended summer Migrant Education Programs, 72% reported children attended Head Start programs, and 91% said migrant children enrolled in public schools when appropriate. Since the migrant children lived in remote agricultural areas, the ability to walk or bike to a school or public playground was questioned, and only 16% of growers said this was possible. The availability at the migrant camps of playground equipment for recreational activities for children was also asked, and results were sparse and varied. The most common play space reported by farm businesses was an open field (42%), with a basketball court as second (18%). Six percent of growers said children living in their migrant camps did not have access to playground equipment.

Comparisons Across Four States

Patterns of difference among states were seen and significant differences were found (Table 2). The majority of migrant workers in PA were men and they worked more months per year than workers in the other states. PA had fewer families with children in the migrant camps, and for the number of migrant workers employed; it appears the camps were smaller in capacity than in the other states. IN farm owners showed lower rates of knowledge regarding available migrant services and allowed less access of health care providers to enter the camps to offer health promotion interventions. The ability for workers or families to prepare their own meals was limited in PA and IN with lower rates of personal kitchen appliances and it appears that the facilities were communal. OH and MI showed greater numbers of children in the camps. MI reported the shortest seasonal use of migrant workers and this is most likely due to the predominant fruit crops grown. MI farm businesses supported the largest numbers of families with children and most children attended summer Migrant Education Programs.

DISCUSSION

This survey sought information from growers, as representatives of their farm businesses, on descriptive characteristics of migrant camps that have the potential to contribute to the health and nutritional status of their migrant workers and migrant families. The survey provided knowledge on the needs of owners and their employees that stimulate new research questions. Three themes were identified from the results: knowledge about available services to migrants, access to nutritious food, and access to recreational space.

Theme 1: Knowledge About Available Services

The Migrant Health Act signed into law in 1962 created a network of health care clinics for farmworkers and their families.^{19,20} The consortium of migrant health care centers provides primary medical, dental, and mental health care to migrant and seasonal workers and their families.²⁰ Thirty-six percent of the owners who responded lacked or had limited knowledge about the health services available to migrant workers and their families.⁴ Data showed that less than half of owners provided health care workers access to the migrant camps for health promotion endeavors, but some were interested in offering more of such services. In response to the inquiry about growers' interest in permitting nurse-led health promotion education at their migrant camps, 20 growers provided name and address information. Practice recommendations include the use of university and agricultural extension programs that may be able to close the knowledge gap of growers regarding available migrant services. More collaborative ventures with health professional students (nursing, medical, dental, ophthalmologic) may also be a vehicle to increase health promotion educations and health care services to migrant families.

Theme 2: Access to Nutritious Food

The need to increase dietary fruits and vegetables for good health and a healthy weight is well established. Individual kitchen appliances varied across the states potentially influencing the preparation of healthy meals. Distances to stores to purchase foods varied; and although the mileage to food markets illustrated a reasonable travel time, some owners reported distances of 15 to 26 miles. With extended working hours during the harvest season, the replenishment of food in the migrant home kitchen might be a problem. Only one quarter of owners who participated in the study reported an on-site farmers' market, whereas 87% allowed workers to go home with picked produce in any or limited amounts. However, the variety of crops grown affects the variation of fruits and vegetables available for household meal preparation. Some specialized farms grow only one fruit, such as blueberries. Future research inquiry into where migrants purchase their fresh produce may

be indicated to understand the purchasing of variety in meals, as well as what forms of transportation are available to migrants for food shopping. Practical recommendations to growers include the establishment of farmers' markets offering fresh produce. Permitting workers to take home picked produce may increase access to nutritious fresh produce for migrant families.

Theme 3: Access to Recreational Space

Past studies have shown that the children of migrant farmworkers have a high prevalence of unhealthy weight.^{2,3,21} This survey showed that public school recreational playgrounds are not easily accessible to children due to the remote location of migrant camps, and migrant camps offer little equipment for them to play. Further investigation needs to be conducted to learn if any cultural or political environment represents additional barriers to children playing outside the temporary migrant home. Children need to be physically active at least 1 hour per day to promote good health and healthy weight.^{22,23} Adults need at least 150 minutes of physical activity per week.²⁴ The expansion of recreational space and acquisition of playground equipment by owners for the migrant camps may help promote adults' and children's activity, decreasing the prevalence of unhealthy weight. Arcury's²⁵ research has shown that violations in North Carolina's migrant housing regulation are common, and although not in violation, some physical characteristics of migrant housing affect workers' quality of life. Practical recommendations to improve physical activity may include financial support or improvement loans by agricultural, professional, and fraternal organizations to assist owners in playground improvements, or large-volume discounts for play equipment can be established with vendors. Perhaps local high school athletic teams can be recruited to conduct sport camps as service projects. In addition, research studies may be designed to test interventions to influence both adult and child activity levels. Knowledge learned from owner participation in this survey can guide the course of future research studies, and provide direction for needed owner education topics at agricultural conferences.

Challenges and Limitations

The challenges of a USPS mail survey included extensive manual labor preparing the survey packets and postal rates that increased halfway through the mailing process. In addition, incorrect or incomplete addresses available through the Internet search on the four state departments of agriculture for farm businesses that held a state license for operating a migrant camp (agricultural labor camp) yielded numerous undeliverable survey packets. The four states organized their data sets differently, and one included the address of the migrant camp but not the main office.

Survey return rates are related to the nature of the population and the subject under investigation.²⁶ Immigration issues have gathered national attention and the topic of migrant workers can cause controversy; both may have influenced return rates. Studies that have been published show that for all survey types (paper and online) that include incentives and follow-ups, the average response rate is 26%.²⁷ With the increase in Internet use, even e-mail survey response rates have decreased yearly from a mean of 62% in 1986, to 24% in 2000.²⁸ Return rates for mail surveys directed to organizations/businesses have been studied and range from 26% to 95%.²⁹ Smith,³⁰ after studying respondents and nonrespondents, found that nonresponse bias is less of a concern for business and organization surveys, compared with surveys for individuals. The response rate in our study was 34%. Dillman et al.¹⁶ suggest that, although not realistic, the goal is always a 100% return rate; nevertheless, this nonresponse error was acceptable with the acknowledgement of response bias.²⁶

This survey study was directed toward the owner of a farm business. Limitations of the study are the lack of generalizability to all migrant workers, migrant camps, migrant

facilities, and services available, as well as limitations to represent the opinions of the greater farm owner population. Four states entered into the study and findings from the remainder 46 states may be different. Results and conclusions drawn are based on those growers who chose to respond to the survey, and there is no knowledge about those who chose not to respond, thereby creating sample selection and response bias in this study. For example, it is possible that responders were growers who were in compliance with worker-related regulations, and therefore were not concerned with violation repercussions. Due to budget restrictions, no effort was planned to contact growers who did not respond, and in any event, this would have been impossible due to the anonymity of the returned surveys. Nonresponders were not compared with responders. There was an assumption that the selection of Midwest state growers would have had similar crops grown within each state due to similar topography and weather patterns. A final limitation was that formative research was used to construct the study survey instrument.

Summary

Migrant workers who contribute to the agricultural workforce represent families with intergenerational transmission of poverty who experience challenges to maintaining good health and good nutrition. Yet, the work efforts of these migrants contribute to the health of all US families. The Latino Consortium of the American Academy of Pediatrics Center for Child Health Research has identified urgent priorities in reducing the health disparities in Latino children and has suggested the need to conduct more research that includes and involves this vulnerable population.³¹ This group of vulnerable families and their children are part of an increasing US Latino population, and many of these children are US citizens by birth.³² A recent study by McLaurin and Lieberman examined the unique health and safety issues of migrant children and identified that unaccompanied minors occupy approximately 10% of the migrant agricultural work force.³³ Recommendations were provided to help promote health and safety to the children of migrant workers and minor migrant workers. The Blueprint for Protecting Children in Agriculture: The 2012 National Action Plan,³⁴ combined with this mail survey study and the McLaurin and Lieberman³³ study, presents evidence that safety and health measures need to be made a priority to optimize childhood and family agricultural health and safety. Understanding the migrant workers' environment and the contributors to their health and nutritional status can help support efforts to improve the health of migrant families and their children, thereby supporting safer US foods and a healthier United States.

Acknowledgments

This work was funded by the Pilot Research Grant Program, Frances Payne Bolton School of Nursing, Case Western Reserve University. Additional support for the author was made possible by the Case Western Reserve University/Cleveland Clinic Clinical Translational Science Collaboration Grant UL1 RR024989 from the National Center for Research Resources (NCRR), a component of the National Institutes of Health (NIH), and NIH Roadmap for Medical Research. The contents of this article are solely the responsibility of the author and do not necessarily represent the official view of NCRR or NIH.

The author acknowledges Ana Solano Lopez and Kaitlyn Roudebush as valuable research team members, Li Lin who contributed statistical support, and those growers who kindly responded to the survey.

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TABLE 1

Selected Characteristics of Migrant Workers and Migrant Camps Stratified by State

	Number of migrant workers	Employee weeks worked	Employee months worked	Number of migrant camps	Number of children incamps
All surveys (<i>N</i> = 232)					
Range	2–600	0–52	2–35	1–23	1–300
25th quartile	10	7	4	1	4
Median	23	10	6	1	7
75th quartile	45	18	9	2	10
State					
IN (<i>n</i> = 16)					
Range	2–500	4–14	3–8	1–10	2–30
Median	20	11	6	1	6
MI (<i>n</i> = 130)					
Range	3–600	0–52	2–35	1–23	1–300
Median	24.5	10	5	1	7
OH (<i>n</i> = 31)					
Range	8–350	6–52	3–12	1–20	2–30
Median	27	15.5	6	1	9
PA (<i>n</i> = 55)					
Range	2–250	6–52	2–12	1–12	1–2
Median	12	10	9	2	1.5

TABLE 2

Significant Fisher's Exact Tests of Camp Characteristics and Growers by State

	IN (n = 16)	MI (n = 130)	OH (n = 31)	PA (n = 55)	Fisher's exact test
Gender of migrants, male only	6 (38%)	17 (14%)	6 (21%)	36 (71%)	<.0001
Personal refrigerator	10 (67%)	106 (88%)	22 (76%)	16 (33%)	<.0001
Personal stove	10 (67%)	105 (88%)	21 (72%)	16 (33%)	<.0001
Families with children	8 (53%)	89 (74%)	20 (69%)	5 (10%)	<.0001
Children attend migrant education programs	6 (75%)	75 (83%)	15 (75%)	2 (33%)	.0052
Small grocers selling Hispanic foods	8 (50%)	87 (73%)	17 (59%)	39 (78%)	.0283
Grower knowledgeable about migrant services	7 (44%)	82 (67%)	21 (68%)	33 (62%)	.0383
Grower permits health promotion interventions	3 (20%)	47 (40%)	16 (55%)	30 (57%)	.0371