

Health Status of Migrant Farmworkers: A Literature Review and Commentary

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Abstract: I made a computerized search of MEDLINE files from 1966 through October 1989 followed by a review of this literature. Four hundred eighty-five articles were scanned; 152 were found specifically related to migrant families, while another 51 articles addressed the health of agricultural workers or farmers in general. Solid data exist on dental health, nutrition and, to a lesser extent, childhood health. Data also were prominent in several disease categories including certain infectious diseases, pesticide exposures,

occupational dermatoses, and lead levels in children.

Estimates of the size of the migrant and seasonal farmworker population vary widely. Basic health status indicators such as age-related death rates are unknown. Prevalence rates of the most common cause of death in the United States have yet to be studied. More research is needed into the health problems and health status of migrant and seasonal farmworker families. (*Am J Public Health* 1990; 80:1213-1217.)

Introduction

Migrant farmworker families are believed to experience poor health compared to the general population.¹ However, their health status has not been well measured, and many studies have not been published in peer reviewed journals. As a result, large gaps exist in the data on basic health status indicators in the migrant population. The contributing factors to this poor health status are even less well documented. I undertook a literature review to assess the state of our knowledge on migrant farmworker health.

Methods

MEDLINE files from 1966 through October 1989 were searched, using the subject headings of migrants and transients (US), health, agriculture, and agricultural workers' diseases; all articles relating to US populations containing the title word "migrant" or "farmworker" were also scanned. A total of 485 articles were identified through this search, and 203 were judged after further review to make specific reference to the health of migrants, farmworkers, or farmers in the United States.* The bibliographies of these articles were then scanned to identify any relevant articles missed by the computer search. In addition, I had access to one unpublished literature search undertaken for the Bureau of Health Care Delivery and Assistance (USPHS-DHHS) in 1984,² and a second literature search first published by the Farmworker Justice Fund in 1985³ and revised in 1988.⁴ The outcomes of these previous literature searches are dealt with in the discussion section of this paper.

Subject matter was divided into 12 categories, including both adult and pediatric health status, health care utilization patterns, health care delivery systems, and eight specific categories of illness by type of disease or organ system. Articles were also analyzed by year of publication.

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Results

Table 1 provides data on the outcome of the search. A further breakdown of the types of articles found by topic and by year of publication (Table 2) illustrates the changing focus of research in migrant health over the past 24 years. The early years were a time of interest in nutritional status, health care delivery systems, and obstacles to health care for the migrant farmworker population. Interest in the risk of pesticides and in the prevalence of infectious diseases showed evidence of continually increasing activity. The first article on AIDS (acquired immunodeficiency syndrome) and HIV (human immunodeficiency virus) seroprevalence in this population appeared in 1987.⁵ No articles prior to 1980 dealt with specific psychiatric or behavioral illness patterns, but in the 1980s quantitative studies have begun to appear in the areas of family violence,⁶ substance abuse,⁷ and specific psychiatric symptomatology.⁸

Topics on which a significant volume of data were found include pesticide risk (including carcinogenic potential), infectious diseases (especially parasites, enteric pathogens, and tuberculosis), and health care delivery. The disciplines of clinical nutrition, dentistry and, to a lesser extent, pediatrics have displayed continuing interest in migrant workers' health.

As early as the 1960s, nutritionists were active in assessing the overall nutritional health status of adults,

TABLE 1—Overview of the Medical Literature in Migrant Health, 1966-89

Subject Area	Migrant-Specific Articles	Farm & Farm Labor (general)	Total
Health Status (Adult)	4	3	7
Health Status (Children)	14	—	14
Nutritional Status	10	—	10
Dental Health	18	—	18
Health Care Utilization	9	—	9
Health Care Delivery & Obstacles to Care	43	—	43
Psychiatric or Behavioral Conditions	7	—	7
Cardiovascular Disease	2	—	2
Infectious Disease	17	1	18
Cancer	—	12	12
Pesticides	22	23	45
Occupational Hazards	6	12	18
Total	152	51	203

TABLE 2—Subjects of Interest in Migrant Health Literature, by Year of Publication

Subject Area	Year of Publication		
	1966-73	1974-81	1982-89
Health Status (Adult)	2	0	5
Health Status (Children)	4	4	6
Nutritional Status	5	3	2
Dental Health	5	7	6
Health Care Utilization	0	5	4
Health Care Delivery & Obstacles to Care	23	14	6
Psychiatric or Behavioral Conditions	1	1	5
Cardiovascular Disease	2	0	0
Infectious Disease	3	5	10
Cancer	1	2	9
Pesticides	4	17	24
Occupational Hazards	4	5	9
Total	54	63	86

children, and pregnant women in the migrant farmworker population.⁹ While under-nutrition (protein-calorie malnutrition, vitamin deficiency, and iron-deficiency anemia) was the focus of previous surveys,¹⁰ future studies will be needed to assess areas of over-nutrition such as obesity and hyperlipidemia.

The dental profession has published many studies assessing the dental health of migrant children and adults using a community-based screening approach.¹¹

The results of several community-based, health screenings of migrant children have been published.¹² While most of the studies published in the 1970s screened only for lead poisoning, the 1980s have seen some broader assessments. However, none have been performed on a large scale, with unbiased sampling methods and attention to differences among various ethnic groups as well as between the three US migrant streams. Table 3 lists a variety of basic questions on migrant health to which we find virtually no answers in the peer-reviewed medical literature. These are discussed in the following section.

Discussion

The Missing Denominator—How Many Migrants Are There?

In migrant health we lack even such basic data as crude death rates, median survival, infant and maternal mortality, and incidence of permanent disability. One of the major difficulties in computing these is the lack of a precise denominator. We do not know how many migrants there are, because of the transient nature of the population, their migrations into and out of the US (both randomly and seasonally), undercounting of workers who meet the legal definition of a migrant but do not fit ethnic or demographic stereotypes, and the desire of many immigrant workers (documented or not) to avoid contact with government agencies.

The Office of Migrant Health estimates that there are three million "migrant and seasonal farmworkers and their dependents" in the United States.¹³ Estimates of the number of "hired farmworkers" in 1985 from the National Agricultural Statistics Service varied from about 1 million (using one method of counting) to over 2.5 million (using a different method).¹⁴ Their surveys were only able to come up with

TABLE 3—Unanswered Questions in Migrant Health

- A. Population Characteristics
 - 1. Size of the Migrant and Seasonal Farmworker Population
 - 2. Age Distribution, Ethnicity, and Family Size of Farmworker Families in East, Central, and West Coast Migrant Streams
- B. Mortality and Survival Data
 - 1. Median Survival
 - 2. Crude Death Rates
 - 3. Age Distributions (Mortality curve)
 - 4. Age-Specific Causes of Death
- C. Peri-Natal Outcome Data
 - 1. Birthweight and Prematurity
 - 2. Neonatal vs Post-Neonatal Infant Mortality*
 - 3. Fetal wastage (Miscarriage & Stillbirth)
 - 4. Congenital Anomalies
 - 5. Maternal Morbidity/Mortality
- D. Chronic Diseases
 - 1. Prevalence of Chronic Diseases
 - 2. Rates of Hospitalization or Bed-Disability Days
 - 3. Incidence of Various Types of Cancer
 - 4. Controllable Medical Risks for Cardiovascular Events
 - a) Hypertension
 - b) Diabetes
 - c) Hyperlipidemia
 - d) Smoking
 - e) Previous Cardiac Ischemia or Angina
- E. Occupational Risks
 - 1. Annual Highway Mileage (Risk of Motor Vehicle Accident)
 - 2. Pesticide Exposure (Frequency of Acute Poisonings and Effects of Chronic Low-Level Exposures)
 - 3. Compliance with Field Sanitation Laws
 - 4. Accidental Injury (Falls, Farm Machinery, etc.)
 - 5. Incidence of Occupational Dermatoses by Crop & Chemical Exposure
 - 6. Effects of Poor Housing
 - 7. Frequency & Severity of Heat & Cold Exposures
- F. Nutritional Factors
 - 1. Obesity
 - 2. Serum Cholesterol and Lipid Profiles
 - 3. Protein/Calorie Malnutrition and Nutritional Anemias in New Migrant Sub-Populations (Haitian and Central American Refugees)
- G. Health-Related Behaviors
 - 1. Tobacco Usage
 - 2. Alcohol Consumption
 - 3. Other Substance Abuse
 - 4. Seat-Belt Use
 - 5. Risk Factors for AIDS
 - 6. Suicide/Homicide and Family Violence
- H. Accessibility to Health Care
 - 1. Utilization of Peri-Natal Care
 - 2. Immunization Status
 - 3. Treatment of Acute Illness Events (i.e., Strep pharyngitis)
 - 4. Utilization of Recommended Cancer Screening
 - 5. Delays in Diagnosis/Treatment Prior to Hospitalization

159,000 "migrant farmworkers" in 1985, a number well below most other estimates.¹⁵

The Bureau of Labor Statistics asserts that "the size of the hired farm working force declined from an average of 3.6 million in the 1950s to 3.2 million in the 1960s and has been fairly steady at 2.7 million in recent years."¹⁶ The same study notes a decline in the migrant farmworker population from 400,000 in the 1960s to 200,000 in the 1970s.

Several reasons exist for these discrepancies. The first is a question of defining terms. The numbers quoted above do not refer to the same population, but rather to various sub-groups. The Office of Migrant Health's definition is the broadest ("migrant and seasonal farmworkers and their dependents") and therefore gives the largest estimate. The Department of Labor and the Department of Agriculture surveys generally count only employed farmworkers over age 14 (each department using different methodologies).

There are no published estimates of the number of days

worked by migrant workers in a typical year, but with the common use of day-laborers the farm labor force may be expected to have a significant number of days without work. Methods such as those used by the Department of Labor that only count "hired farmworkers" at a given point in time may underestimate the true size of the farmworker population. Similarly, the methodology published by the Office of Migrant Health¹⁷ based on crop acreage and the number of person-hours required to harvest a given crop would also be expected to undercount the farmworker population by an amount proportionate to the number of farmworkers unemployed during that harvest season.

In describing a study population it must always be noted whether a given population estimate is referring only to migrant farmworkers, or to migrant and seasonal farmworkers, or to a composite of farmworkers, crew chiefs, and farm managers. The estimate must also be examined for its inclusion or exclusion of family members and dependents, as well as unemployed farmworkers. Characteristics of the overall population will not necessarily be representative of workers in different geographic streams (East, West, and Central), of workers in different seasons (upstream and downstream) or on different crops, or of the various ethnic and other sub-populations of the farmworker population. Current estimates of the migrant population just do not have the needed accuracy or reliability to be used as denominators in the calculation of morbidity and mortality figures.

Mortality Data

In the study period (1966-89) there was no published study which effectively measured median age of survival, crude death rates, or age-specific mortality in the migrant farmworker population. A literature search commissioned by the Department of Health and Human Services in 1984 reviewed over 400 articles in 60 journals and uncovered only "sporadic documentation" of health problems, none of which included specific mortality or survival data.² The Farmworker Justice Fund undertook a similar literature review in 1985 and again in 1988 which documented a variety of occupational and lifestyle-associated hazards, but found no hard data on health indicators.^{3,4}

Death certificate data in general has limitations,¹⁸ but there are additional problems specific to migrant farmworkers. In no state is migrant status recorded on the death certificate, so deaths of agricultural workers would include seasonal and homebased farmworkers, thus diluting out the specific health effects of migratory lifestyle. Another problem is the "healthy worker effect," the exclusion of former farmworkers who have returned to their country of origin or who have become unemployed or disabled prior to their death. Members of the extended family, including children, who undoubtedly engage in farm labor may or may not be identified as having a primary occupation.

Perinatal Outcomes

A nutritional survey done by Chase, *et al.*, in 1971 in Colorado derived from their maternal interviews an estimate of infant mortality among Mexican American farmworkers in Colorado that was nearly three times that of the general population (63 per 1,000).¹⁹ A more recent study (1978) randomly surveyed 145 married women in migrant farmworker households in Wisconsin.²⁰ Of these, 132 women had given birth to a total of 629 children (excluding stillbirths). The reported infant mortality rate was 29 per 1,000, while early childhood deaths (age 0-5 years) occurred at a rate of 46 per 1,000. Cause of death was not reported. Large-scale

maternal interview studies to define infant mortality in the farmworker population have not been undertaken.

Unfortunately, a large sample of perinatal outcome data from migrant health centers has never been analyzed for publication in the peer-reviewed literature. Migrant Health Centers have been estimated to reach approximately 17 percent (500,000) of the estimated 3 million who live in migrant and seasonal farmworker families.¹³ Women receiving comprehensive perinatal care in a migrant health center might be expected to have lower infant mortality rates than those who receive no prenatal care prior to hospital delivery or those whose babies are delivered by a traditional birth attendant, but this has never been documented.

Occupational Risks

In 1987 agriculture surpassed mining as the nation's most hazardous occupation with 1,700 work-related deaths (52 per 100,000 workers). The US Bureau of Labor Statistics estimates that there are 12.7 cases of injury and illness per 100 fulltime workers per year.²¹ Several reviews of the specific occupational hazards of agricultural labor are available.^{3,22} Hazards include chronic and acute pesticide exposures, lack of safe drinking water and toilets, occupational dermatoses, acute injuries (falling from heights and farm machinery injuries), and chronic low-grade back and joint trauma. Most of these risks have been poorly quantified. One study of emergency room visits for farm equipment injuries suggests a methodology for future studies and monitoring of acute agricultural illnesses and injuries.²³

The difficulty in quantifying pesticide exposures has been documented best in California, which has the nation's strongest mandatory reporting legislation. The state reported a 30 percent reduction in pesticide poisoning from 1985 to 1986, not from an actual reduction in risk but rather from a change in the criteria for documenting exposures.²⁴ The scant data that have been published on chronic or low-level pesticide exposure, suggest that limb-reduction birth defects,²⁵ childhood leukemias²⁶ and brain tumors,²⁷ adult lymphomas and lymphosarcomas²⁸ may be linked with occupational exposure to pesticides.

The Council on Scientific Affairs of the American Medical Association recently reviewed findings of the US Environmental Protection Agency and of the International Agency for Research on Cancer with regard to the carcinogenicity of agricultural chemicals. They report two of 53 chemicals to be *definitely* carcinogenic (arsenic and vinyl chloride). In addition they found 13 of 53 to be *probably* carcinogenic, and 16 of 53 *possibly* carcinogenic.²⁹ Sharp, *et al.*, have also published an excellent review of the carcinogenic and neurotoxic effects of chronic low-level exposure to pesticides.³⁰

Disability

A 1974 survey found that 44.5 percent of migrant farmworker households had one or more members who described themselves as disabled, but this study did not obtain clinical correlation of the degree or cause of the disability.³¹ No survey of workers for the prevalence of disabling musculoskeletal conditions was found in this review.

Infectious Diseases

A recent study of 709 migrant farmworkers on the Delmarva Peninsula showed a high rate (37 percent) of PPD positivity (10 mm or greater) on TB skin testing, but found only one case of active tuberculosis,³² suggesting that the

prevalence of tuberculosis among migrant farmworkers may have been overestimated in previous studies which relied on skin testing. The complete absence of articles on the most common infections seen in clinical practice, such as otitis media or streptococcal pharyngitis in children, was striking. Similarly the most common infectious causes of hospitalization among migrants in this author's experience—such as cellulitis, diabetic foot infections, pneumonia, and appendicitis—all are absent from the literature on migrant health.

Chronic Diseases and Premature Mortality

A basic problem with the predominance of research on conventional topics of migrant health—such as pesticides, TB, and parasites—is that it may give disproportionate attention to diseases that are more common among migrants, but still may not be the major cause of their mortality, e.g., cardiovascular disease and complications of diabetes.

There have been a plethora of health care utilization studies documenting the most common diagnoses among migrants seeking health care.² What all these studies tell us is that while some uncommon diseases are more prevalent among migrants, common diseases such as diabetes and hypertension in adults still lead the list. From the current literature base it is impossible to calculate the incidence, prevalence, or risk factors for cancer, heart disease, or stroke in the migrant farmworker population, even though these are the most common causes of death in the US.³³

Socioeconomic Status

Clearly the migrant population is poor—the average migrant farmworker earned only \$3,295 per year (1985) from farm labor, and income from all sources was only \$6,194.³⁴ Few studies compared the health problems of farmworker families to other low-income minority groups rather than to the general population. An example of this more meaningful comparison is one which compared blood levels of migrant children to those of a population of urban poor children.³⁵

Conclusions

Some progress has been made. Professionals in dentistry and clinical nutrition have made good baseline assessments of the health status of their clients and are now ready to move into on-going monitoring and intervention programs to improve dental and nutritional health status. In other areas we have only small foci of data, often in stereotyped migrant-specific disease categories. New areas such as psychiatric and behavioral morbidities are beginning to be explored, and methodologies are becoming more precise and quantitative. Such studies will need to be undertaken across a broad range of farmworker sub-populations to determine the extent to which results can be generalized to all farmworkers. Other basic indicators of health and disease, as well as the size of the total population and its sub-sets, remain totally unknown.

While services provided by migrant health centers may have improved the overall health of migrant farmworker families by improving their access to health care, there are very limited data with which to prove this point. Neither can it be proven whether the health problems of migrant farmworkers are the same as those of other groups suffering from poverty and powerlessness, or whether there are migrant farmworker-specific factors in their occupation and lifestyle which contribute to death or disease. The fields of undiscovered knowledge in migrant health are vast and ready for harvest. More research is needed.

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IVACG Releases Statement on Role of Vitamin A in Child Health and Survival

The XIII International Vitamin A Consultative Group (IVACG) Meeting in November 1989 reviewed the evidence available to date on the relationship of vitamin A depletion and deficiency to childhood morbidity and mortality. Results from completed studies as well as preliminary findings of others underway were presented and discussed by experts from several disciplines. The IVACG Steering Committee realized the need for an interim statement summarizing the weight of evidence available because results from several large, randomized masked trials are unlikely to be available for one to two years. The following statement, released in June 1990, represents the steering committee's careful consideration of the available evidence.

- An adequate vitamin A status prevents nutritional blindness and contributes significantly to child health and survival.
- The role of vitamin A in preventing nutritional blindness is well documented. Evidence is accumulating that it also reduces mortality. The mechanism(s) by which it has this effect is unclear.
- The impact of improved vitamin A nutrition will vary with the severity of vitamin A deficiency and the contributions of other ecological factors.
- It is therefore imperative to improve the diet and raise the level of vitamin A nutrition where a current intake is inadequate.

The IVACG Steering Committee hopes that this statement will be useful in the process of formulating policies and programs to control and combat vitamin A deficiency. The International Vitamin A Consultative Group was established in 1975 to guide international activities aimed at reducing vitamin A deficiency in the world. For further information, contact the IVACG Secretariat, The Nutrition Foundation, Inc., 1126 Sixteenth Street, NW, Washington, DC 20036. Tel: (202) 659-9024.