Occupational Health Surveillance of US Farm Workers

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MS. CONNELLY: Thank you, Dennis. Our final speaker this morning for this plenary session will be a substitute for Lorraine Cameron. We have Nina Lalich. She is Chief of the Illness Effects Section of the Surveillance Branch, Division of Surveillance Hazard Evaluations, and Field Studies at NIOSH. She will report on the occupational health surveillance of United States farm workers.

MS. LALICH: Thank you, Barbara. I am filling in for Dr. Cameron who could not be here today. I am going to present the results of a study that she did with our colleagues in the Surveillance Branch.

This study was part of a larger project that we are working on to explore potential data sources for occupational health surveillance of farm workers.

The purpose of this study is to describe disease patterns in farm workers based on an analysis of death certificate data from 28 states.

Farm workers are a difficult population to define. Our study does not include farm owners and operators but rather we are interested in farm workers who are defined by the Census Bureau as those who work under supervision to plant, cultivate, harvest and care for farm animals.

Some other definitions you may run into include one by the Department of Labor for seasonal agricultural services workers. These are people who have seasonal employment in agricultural field work and this excludes livestock, poultry and fodder. A subset of farm workers, the migrant farm workers, are defined by the Public Health Service as those who must establish a temporary abode to do seasonal agricultural work.

Our study that I am going to talk about today uses the Census Bureau definition because we are working with death certificate data and the type of occupational information that is available on the death certificate is really most easily classified with the Census Bureau classification system.

Depending on which definition you are using the estimates of the size of this population vary pretty widely, they range from 300,000 to 3 million.

To give you some idea of farm worker demographics we looked at data from the Department of Labor survey, the National Agricultural Workers Survey or the NAWS, that was done in 1990.

This survey only covers people who are defined under that seasonal agricultural worker definition, 71 percent are hispanic, 24 percent white and 3 percent were black. The number of blacks has decreased over time. The median age was 31 years and

11 percent are 50 years or greater. Sixty-two percent are foreign born. Fifty-one percent have been in the United States eight or more years. Twelve percent of seasonal agricultural service workers are unauthorized to be working in the United States.

Looking at some other work and social factors for farm workers the average farm worker spends 26 weeks per year doing farm work. During this time they average about 37 hours per week. Most of the remainder of the year farm workers are unemployed.

Looking at the work histories that were reported on this survey about 67 percent of the jobs that they reported could be classified as farm work. Most of the people plan to remain doing farm work. Forty-two percent are migrant workers who must travel 75 or more miles from their home to their place of work and establish a temporary dwelling. Fifty percent are below the poverty level and 79 percent have no health insurance.

Some of the potential health problems of farm workers include agrichemical related illness, injuries, motor vehicle accidents, and heat stress, musculoskeletal problems particularly back pain, infectious disease and other problems resulting from poor field sanitation, respiratory and skin problems many of which may be occupationally related, and psychosocial and poverty related health effects.

To explore the patterns of mortality in farm workers we used a NIOSH database called the National Occupational Mortality Surveillance System or NOMS. This data base is based on death certificate data for the years 1979 through 1990. The number of states in the data base each year has increased, starting with just 2 states in 1979 and we are up to 22 states in 1990. Some states have dropped out so that the total in the entire 12 years of the data base are 28 states[1].

The usual occupation and industry of the decedent is recorded on the death certificate and is coded according to the 1980 Census Classification System. There are codes for farm owners, farm operators and for farm workers. As I mentioned earlier our study was restricted to the farm workers.

The underlying cause of death was coded according to the Ninth Revision of the International Classification of Diseases. The total number of deaths included in our analysis was almost 4.9 million deaths. The number of farm worker deaths were 12,476 white males, 841 white females, 5,514 black males and 2,297 black females.

Data on Hispanic origin are unavailable in this database until 1990. Most Hispanics are probably classified as white in this data set.

The demographic distribution of our data differs from the distribution that you saw earlier from the Department of Labor data. Obviously we do not have the breakout for the Hispanics. Our database does not include all of the states and you can see that we are missing some important ones such as Texas and Florida. The NOMS states are in blue on this map.

It is difficult to determine the representativeness of our data because a large percentage of farm workers are migrant. It is not really known what happens to them when they retire and therefore where they end up when they die.

The data were analyzed using a NIOSH computer program that calculates cause-specific, age-standardized Proportionate Mortality Ratios or PMRs. A PMR is the proportion of deaths for a specific cause in an occupation divided by the proportion of deaths for that cause in the NOMS database, multiplied by 100. A PMR in excess of 100 indicates an excess risk for that cause of death. The computer program also calculates 95 percent confidence intervals. (Slide shown.)

This slide shows some of the selected results from our analysis. We chose these because the PMRs were elevated for at least two of the four race and sex groups. The bars show the size of the PMR and the black arrows indicate the confidence intervals.

Cerebrovascular disease mortality and injury and poisoning deaths were elevated in all of the four groups. Respiratory disease mortality was elevated in all groups except the black females. Alcohol related deaths were elevated in all groups except white females.

Since the focus of our work in the Surveillance Branch is to look at disease rather than injuries, today I will present in more detail, some of the data on respiratory and alcohol-related deaths.

The PMRs for chronic obstructive pulmonary disease were elevated for white males and white females. PMRs for tuberculosis were elevated in all except the white females, as was pneumonia.

Deaths due to mental disorders related to substance abuse, a category that would include alcoholism, were elevated in all groups, although not significantly in the white females. Cirrhosis was elevated only in the white males. Deaths due to alcohol poisoning was elevated in white and black males.

The results of this analysis should be interpreted keeping in mind several of the limitations of a death certificate based PMR study. PMRs are proportions not rates and they may be biased if the overall Standardized Mortality Ratio for the occupation is either less than or greater than 100 or they may be biased if the PMR is excessively high or low for a common cause of death. In our analysis we found that the cancer PMRs were low for farm workers and this could be resulting in artificially inflated PMRs for some of the other causes of death.

The recorded occupation on the death certificate may be inaccurate. As I discussed earlier, older farmers may leave farm work and it is unclear what may be indicated on the death certificate as their usual occupation.

Since the Census classification system includes codes for farm owners and operators on the death certificate if the person is reported as a farmer I think that those are usually classified as a farm owner or farm

operator; so we really do not know how many of our farm workers are actually misclassified as farm owners or operators.

Not shown on this slide — we are not sure whether there may be problems with the quality of the cause of death information for farm workers. Because of the problems that they have with access to health care they may not be getting good information about the cause of death on their death certificates.

As I mentioned earlier, the NOMS database does not include all states. For some states we only have a few years of data, particularly in California we only have data for the years 1979 through 1981 because they have not been coding occupation and industry on an ongoing basis since that time. We only have the ethnicity data since 1990.

Finally, death certificates, for the most part, do not contain information on important confounders and exposures. There are a few states that are now collecting data on smoking but, that information is not available in the NOMS database.

Our conclusions are that the elevated PMRs for injuries, alcohol related deaths and tuberculosis are consistent with other studies of farm workers. The elevated PMRs for chronic obstructive pulmonary disease (COPD) and for cerebrovascular disease need further exploration. We would like to know whether some of the excess in the COPD deaths is related to tobacco use or whether there might be other explanations. It would be interesting to know whether the excess mortality for cerebrovascular disease might be explained in part by problems with access to medical care. In general there was consistency in the results across the race and sex groups.

Many of the causes of death that were elevated in farm workers are those that would be amenable to prevention or intervention activities.

Some of our future and ongoing activities in our surveillance project include doing some further in depth mortality analyses. We would like to possibly explore analyses that would separate the different geographic regions. As we get more years of data we hope to be able to look at the data on hispanics. We also have data on the contributing causes of death which might be interesting in looking at some of the causes such as the respiratory disease.

We also have some efforts underway to explore sources for morbidity data. We are supporting the California Farm Family Health and Hazard Survey which is collecting health data on farm workers in two counties in California through personal interviews.

We are exploring potential uses of the data from the migrant clinics nationwide through a project that we are doing with the National Migrant Resource Program.

We would also like to do some more work in the area of exploring methods of characterizing exposures for farm workers. In Illinois we are providing technical assistance for a pilot survey that is being done there in conjunction with the migrant clinics where they are trying to do a survey of

pesticide exposure in farm workers.

Finally, we are hoping to encourage more active surveillance of farm workers and follow-up of case reports that are identified through various NIOSH programs such as the Sentinel Event Notification System for Occupational Risk (SENSOR) which includes surveillance for pesticide poisonings, and also our various technical assistance programs. Thank you.■

ENDNOTE:

1. The NOMS data were provided in part by State Vital Statistics Offices through the Vital Statistics Program of the National Center for Health Statistics (NCHS), with the support and collaboration of the National Institute for Occupational Safety and Health (NIOSH) and the National Cancer Institute (NCI). Additional data were provided directly to NIOSH by selected State Vital Statistics Offices.

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