

Assessing the Health of Migrant and Seasonal Farmworkers in New York State: Statewide Data 2003–2005

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Abstract: **Objectives.** New York State data were used to document demographic characteristics and identify the top five most prevalent disease conditions among migrant and seasonal farmworkers and their families working in the state from 2003 to 2005. **Methods.** Prevalence estimates were derived using enumeration and diagnosis data provided by New York State Department of Health contractors. The sample totals ranged from 6,500 to 8,000 migrant and seasonal farmworkers and their families. **Results.** The majority of migrant and seasonal farmworkers were Hispanic with New York or Mexico the most frequently reported migrant home. Infections, muscular skeletal problems, respiratory disease, hypertension, and diabetes were the five most prevalent diseases identified. **Conclusion.** Migrant and seasonal farmworkers in New York State experienced health conditions common among agricultural workers. Additional research and surveillance are necessary for understanding and serving their health needs.

Key words: Migrant and seasonal farmworkers, disease prevalence, infection, chronic diseases, race, ethnicity.

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Migrant and seasonal farmworkers (MSFWs) are a vulnerable population often overlooked for public health programs and disease surveillance. Due to the seasonal nature of their work, MSFWs work an average of 90 to 190 days a year doing farm work.¹ Data on MSFWs have many limitations because of the difficulty obtaining an accurate count of the population. Nationally, there are an *estimated* three to five million MSFWs who play a vital role in crop production and marketing, but this estimate is constantly changing and unverifiable.^{2,3} Very little is known about the health of MSFWs.

Migrant and seasonal farmworkers contribute to New York State's multi-billion dollar agricultural industry.⁴ New York State (NYS) is considered part of the Eastern Migrant Stream, the path along the Eastern coastal states that MSFWs and their families follow as they move in search of employment based on harvest seasons.^{5,6} From 2003 to 2005, 57% of MSFWs in the Eastern Migrant Stream were male and between the ages of 18 and 44 years old, with a median age of 34 years, and 95% were foreign-born.⁷ Of those foreign-born, 75% originated in Mexico.⁷ Migrant and seasonal farmworkers tend to live in crowded conditions.^{8,9} They are also sometimes exposed to health hazards that put them at increased risk for injuries, accidents, musculoskeletal problems, and pesticide exposure, as well as respiratory disease and reproductive problems.^{10,11}

It is difficult for MSFWs to obtain or use health care services because they tend to work long hours and receive low pay, many earning less than \$7,500 annually.¹² There is a risk of loss of income if time is taken away from work to seek health care. These factors often inhibit MSFWs ability and potentially their willingness to seek health care services.

Compounding these difficulties of health care access is the fact that the majority of MSFWs are uninsured and ineligible for state-assisted health care services. Employer-based health care coverage is rarely available to MSFWs and their migratory nature frequently disqualifies them from utilizing state-supported health care programs, such as Medicaid, because of state residency requirements. In 2000, 85% of MSFWs were uninsured, compared with 37% of all low-income adults in the U.S.¹³ Language and literacy barriers may also influence MSFWs' access to care. Only 5% of Mexican-born MSFWs and only about two-thirds of American-born Hispanic MSFWs speak and read English.³ Similar barriers to health care services for MSFWs in NYS's rural areas have been identified.^{3,14}

In recognition of MSFWs' barriers to health care, the NYS Dept. of Health established the Migrant and Seasonal Farmworker Health Program in 1988 to reduce barriers and increase access to care in medically underserved rural areas. The NYS MSFW Health Program provides funding to 15 contractors who serve MSFWs across the state. These contractors provide services such as primary/preventive medical and dental services, transportation, interpretation and translation, health education, and outreach services. The purpose of this paper is to document the demographic characteristics and identify the top five most prevalent diseases among MSFWs in NYS between 2003–2005 based on data from these contractors.

Methods

Population. Migrant and seasonal farmworkers were defined as agricultural workers who were employed on a seasonal basis and established a temporary residence for the purpose of such employment.^{15,16} The data were provided by the NYS Dept. of Health MSFW Health Program's contractors in the Program's reports provided yearly from 2003 to 2005. Reports collected information on the estimated MSFW population by county, the aggregate data on demographics, disease conditions diagnosed or treated, and the number of medical and dental services provided to MSFWs by each contractor. Data presented are based on six (of a total of 15) MSFW contractors who reported diagnosed or treated cases of each disease or condition. The contractors included two migrant/community health centers, three county health departments and one diagnostic and treatment center. They provided services in 13 out of the 57 counties in NYS, excluding New York City.

Demographic variables. The demographic data collected included age, race/ethnicity, and reported migrant home. Reported migrant home was defined as the MSFW's place of origin. Contractors requested these data from MSFWs during clinic or in-camp visits and reported the data aggregately. Age was collected using four categories: 0–5 years, 6–18 years, greater than or equal to 19 years, and unknown. Age categories were based on the source of funding for services. For example, MSFWs under the age of 19 qualify for federally funded vaccines while MSFWs aged 19 and older receive state-funded vaccines. Race/ethnicity categories included Hispanic, Caucasian, African American, Asian/Pacific Islander, Native American, Haitian, Jamaican, unknown, and other. Reported migrant place of origin categories included Mexico, Jamaica, Puerto Rico, Other Latin America, New York only for the season, Texas, Florida, and U.S. other than NY, TX, FL, as well as unknown and other. The denominators used for describing the demographics were the total number of unduplicated MSFWs served by the six contractors for each year.

Disease prevalence variables. The disease data included the number of MSFWs diagnosed or treated for 20 disease conditions; the five most prevalent will be presented: diabetes, hypertension, infections, muscular skeletal problems, and respiratory disease. Infections included pharyngitis, meningitis, encephalitis, contact dermatitis, and upper respiratory, eye, ear, dental, and skin infections.

The denominators used for the estimated disease prevalence analysis were the total estimated MSFW population, children and adults combined. The contractors were required to provide county-level MSFW population estimates for their catchment areas. To obtain county-level MSFW population estimates, the contractors identified MSFWs working on farms as well as MSFW families residing in migrant camps or in other off-site housing when providing outreach and services. If more than one contractor provided services in a county and each reported a MSFW population estimate for that county, the average of their MSFW population estimates was used for analysis. To assist in ranking the 20 disease conditions for comparison, a three-year average of the estimated disease prevalence was calculated.

Results

During 2003–2005, the MSFW population in NYS was predominantly 19 years of age or older, and Hispanic. Most reported that their home was within the United States. As shown in Table 1, MSFWs reporting they were Hispanic and 19 years old or older increased across the three years. Many MSFWs did not report their race/ethnicity (indicated by *Unknown* being the second largest category for all three years). Approximately half of MSFWs reported that their place of origin was in the United States, largely New York for the season, Texas, or Florida.

Based on the three-year averages, the five most prevalent health conditions among MSFWs who sought health services were: 1) infections (6.0%), 2) muscular skeletal problems (3.8%), 3) respiratory disease (3.8%), 4) hypertension (3.7%), and 5) diabetes (3.3%). However, the estimated prevalence varied by year for most diseases. See Table 2 for details.

Discussion

Demographic characteristics. Similar to national data, MSFWs in NYS were predominantly Hispanic. There were many children (0–18 years old) living with farmworkers, suggesting that many MSFWs in NYS traveled with their families. National data indicated that nearly half of all MSFWs were accompanied by a family member in 2002.¹ The demographic composition of MSFWs in NYS was strikingly similar to the demographic composition in other states such as Florida.³ This was expected since both New York and Florida are part of the Eastern Migrant Stream.^{5,6}

Infections. The most commonly reported conditions among MSFWs in NYS were infections. This was the first study to examine the prevalence of several types of infections among MSFWs. No known studies identified upper respiratory infections, pharyngitis, meningitis, encephalitis, eye infections, ear infections, or dental infections among MSFWs. However, skin infections and contact dermatitis have been well-documented and are the result of working and living conditions.^{17–25} Although the prevalence of skin infections in the literature was inconsistent^{17,26–28} (see Table 3), the estimated prevalence found in this study (2.2% to 2.5%) was lower than expected.^{29–31}

The wide variation in the prevalence of skin diseases could be due in part to patterns of diagnosis. Studies were either based on self-report within the previous year²⁸ or on a clinical diagnosis by a dermatologist during a specific period of time.^{17,27} Recall bias or under-reporting due to under-diagnosis and/or under-utilization of health care might account for differences in observed prevalences. Two important strengths of the current study are that the data included skin diseases diagnosed by clinicians in clinic or during in-camp visits, and the data were routinely collected each year by the MSFW Health Program, which is possibly why the estimated prevalence of skin diseases remained constant.

Muscular skeletal problems. It was expected that muscular skeletal problems and respiratory diseases were two of the most prevalent conditions. Research indicates that muscular skeletal problems are a consequence of agricultural work due to heavy lifting, stooping and the repetitive nature of the work.^{27,32–35} Table 3 indicates there is variation

Table 1.

DEMOGRAPHIC CHARACTERISTICS OF MIGRANT AND SEASONAL FARMWORKERS WHO OBTAINED HEALTH SERVICES FROM CONTRACTORS IN NEW YORK STATE, 2003–2005^a

	2003 N=6,516 ^b		2004 N=6,673 ^b		2005 N=7,920 ^b	
	# MSFWs	%	# MSFWs	%	# MSFWs	%
Age						
≤5 years	1,018	15.6	893	13.4	684	8.6
6-18 years	1,395	21.4	1,124	16.8	985	12.4
≥19 years	4,103	63.0	4,567	68.4	6,251	78.9
Unknown	0	0.0	89	1.3	0	0.0
Race/Ethnicity						
Hispanic	5,017	77.0	4,853	72.7	6,746	85.2
Caucasian	223	3.4	125	1.9	234	3.0
African American	207	3.2	135	2.0	324	4.1
Jamaican	399	6.1	69	1.0	2	<0.1
Haitian	41	0.6	8	0.1	4	0.1
Asian/Pacific Islander	56	0.9	48	0.7	82	1.0
Native American	0	0.0	1	<0.1	5	0.1
Other Categories ^c	27	0.4	2	<0.1	5	0.1
Unknown	546	8.4	1,432	21.5	518	6.5
Reported Migrant Home						
New York (for season)	1,588	24.4	1,213	18.2	1,945	24.6
Texas	1,003	15.4	737	11.0	1,226	15.5
Florida	469	7.2	547	8.2	579	7.3
USA (except NY, TX, FL)	28	0.4	27	0.4	42	0.5
Puerto Rico	303	4.7	454	6.8	352	4.4
Mexico	1,561	24.0	2,032	30.5	2,304	29.1
Other Latin Americas	4	0.1	274	4.1	1	<0.1
Jamaica	464	7.1	309	4.6	507	6.4
Other Categories ^d	1	<0.1	8	0.1	5	0.1
Unknown	1,095	16.8	1,072	16.1	959	12.1

^aDemographic data reported by six contractors of the MSFW Health Program, NYS Department of Health: 2 Migrant/Community Health Centers, 3 county health departments and 1 diagnostic and treatment center. These six contractors provided services to MSFWs in 13 out of 57 counties in NYS, excluding New York City.

^bThe denominator is the total number of MSFW clients provided health services by the six contractors in a given year.

^cIncludes Multiracial, Bangladeshi and Creole

^dIncludes Haiti and New York (long term)

MSFW = migrant and seasonal farmworker

NYS = New York State

Table 2.
ESTIMATED PREVALENCE OF SELECTED HEALTH
CONDITIONS IN MIGRANT AND SEASONAL FARMWORKERS
IN NEW YORK STATE, 2003-2005^a

Condition	2003 N=26,586 ^b		2004 N=22,229 ^b		2005 N=22,319 ^b		3-Year Average
	# Cases	%	# Cases	%	# Cases	%	%
Infections	1,057	4.0	1,910	8.6	1,181	5.3	6.0
Muscular Skeletal	930	3.5	1,200	5.4	561	2.5	3.8
Respiratory Disease	1,142	4.3	869	3.9	681	3.1	3.8
Hypertension	1,812	6.8	560	2.5	397	1.8	3.7
Diabetes	1,144	4.3	819	3.7	422	1.9	3.3
Gastro-Intestinal Disorders	1,331	5.0	615	2.8	258	1.2	3.0
Cardiovascular	820	3.1	376	1.7	576	2.6	2.5
Skin Disease	580	2.2	554	2.5	490	2.2	2.3
Sexually Transmitted Diseases	187	0.7	412	1.9	119	0.5	1.0
Urinary	166	0.6	285	1.3	173	0.8	0.9
Emotional Disorder	157	0.6	233	1.0	227	1.0	0.9
Tuberculosis	244	0.9	173	0.8	159	0.7	0.8
Drug Abuse	27	0.1	346	1.6	8	<0.1	0.6
Alcoholism	28	0.1	121	0.5	14	0.1	0.2
Hearing Disorder	4	<0.1	12	0.1	99	0.4	0.2
Obesity	28	0.1	44	0.2	32	0.1	0.1
Lead Poisoning	12	<0.1	10	<0.1	8	<0.1	<0.1
Parasites	15	0.1	8	<0.1	2	<0.1	<0.1
HIV/AIDS	0	0.0	11	<0.1	3	<0.1	<0.1
Poisoning	0	0.0	0	0.0	11	<0.1	<0.1

^aPrevalence analysis based on data from 6 contractors of the MSFW Health Program: 2 Migrant/Community Health Centers, 3 county health departments and 1 diagnostic and treatment center.

^bThe denominator is the total migrant population estimate (adults and children combined) provided by the 6 contractors. The migrant population estimate reflects the number of MSFWs and their family members working in 13 out of 57 counties in NYS, excluding New York City.

MSFW = migrant and seasonal farmworker

NYS = New York State

among studies.^{27,28,36-42} This study reported the estimated prevalence of muscular skeletal problems among MSFWs to be between 2.5% and 5.4%, which falls within the range for the Eastern Migrant Stream.

Respiratory disease prevalence. Respiratory problems are consistently associated with agricultural work, primarily due to exposures to pesticides, natural fungi and dust.⁴³⁻⁴⁵ It is difficult to compare this study with others because the NYS MSFW

Table 3.

**DIFFERENCES IN DISEASE PREVALENCE IN THE LITERATURE IN MIGRANT HEALTH,
EASTERN MIGRANT STREAM, 1988–2008**

Disease/ Condition	Author(s)	Study Period	Study Location	Study Population	Pattern of Diagnosis	Prevalence Calculation		Prevalence (%)
						Numerator	Denominator	
Infections ^a								
Skin Disease	Guarnaccia et al. ^b	1982– 1984	New York and Florida	195 farmworkers (New York); 229 farmworkers (Florida)	Clinical diagnosis	Total number of workers diagnosed with condition	Total number of workers in sample	0.0 (New York) and 0.0 (Florida)
	Krejci- Manwaring et al. ^c		North Carolina	59 migrant workers	Clinical diagnosis	Total number of workers diagnosed with condition	Total number of workers in sample	77.7
	Quandt et al. ^d		North Carolina	200 poultry workers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	21.5
Muscular Skeletal ^e	Browning et al. ^f	1994– 1995	Kentucky	998 farmers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	8.8
	Guarnaccia et al. ^b	1982– 1984	New York and Florida	195 farmworkers (New York); 229 farmworkers (Florida)	Clinical diagnosis	Total number of workers diagnosed with condition	Total number of workers in sample	0.4 (New York) and 4.1 (Florida)

(Continued on p. 455)

Table 3. (continued)

Disease/ Condition	Author(s)	Study Period	Study Location	Study Population	Pattern of Diagnosis	Prevalence Calculation		Prevalence (%)
						Numerator	Denominator	
Muscular Skeletal (continued)	Guo et al. ^g	1988	U.S.	1,198 male agricultural workers; 685 female agricultural workers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	16.7 (males) and 10.8 (females)
	Lipscomb et al. ^h	2002– 2004	North Carolina	291 poultry workers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	26.8
	Lyman et al. ⁱ		Alabama and Mississippi	1,310 male farmers and farmworkers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	23.4
	McGwin et al. ^j	1994– 1996	Alabama and Mississippi	1,246 farmers and farmworkers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	10.5
	Quandt et al. ^d		North Carolina	200 poultry workers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	23.0

(Continued on p. 456)

Table 3. (continued)

Disease/ Condition	Author(s)	Study Period	Study Location	Study Population	Pattern of Diagnosis	Prevalence Calculation		Prevalence (%)
						Numerator	Denominator	
Respiratory Disease ^k	Guarnaccia et al. ^b	1982– 1984	New York and Florida	195 farmworkers (New York); 229 farmworkers (Florida)	Clinical diagnosis	Total number of workers diagnosed with condition	Total number of workers in sample	6.2 (New York) and 0.9 (Florida)
	Hoppin et al. ^l	1993– 1997	Iowa and North Carolina	25,814 female farmworkers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	2.7 (asthma); 0.8 (chronic bronchitis)
	Quandt et al. ^d		North Carolina	200 poultry workers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	14.5
Hyper- tension ^m	Guarnaccia et al. ^b	1982– 1984	New York and Florida	195 farmworkers (New York); 229 farmworkers (Florida)	Self- reported	Total number of workers reporting condition	Total number of workers in sample	36.4 (New York) and 31.0 (Florida)
Diabetes ⁿ	Guarnaccia et al. ^b	1982– 1984	New York and Florida	195 farmworkers (New York); 229 farmworkers (Florida)	Self- reported	Total number of workers reporting condition	Total number of workers in sample	8.2 (New York) and 3.9 (Florida)

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Table 3. (continued)

Disease/ Condition	Author(s)	Study Period	Study Location	Study Population	Pattern of Diagnosis	Prevalence Calculation		Prevalence (%)
						Numerator	Denominator	
Diabetes (continued)	Lipscomb et al. ^b	2002– 2004	North Carolina	291 poultry workers	Self- reported	Total number of workers reporting condition	Total number of workers in sample	3.1

^aInfections/Skin Disease

^bGuarnaccia PJ, Lowe Angel J, Angel R. The impacts of farm work on health: analyses of the Hispanic health and nutrition examination survey. *International Migration Review*. 1992;26(1):111–32.

^cKrejci-Manwaring J, Schulz MR, Feldman SR, et al. Skin disease among Latino farmworkers in North Carolina. *J Agric Saf Health*. 2006 May;12(2):155–63.

^dQuandt SA, Grzywacz JG, Marin A, et al. Illnesses and injuries reported by Latino poultry workers in western North Carolina. *Am J Ind Med*. 2006 May;49(5):343–51.

^eMuscular Skeletal

^fBrowning SR, Truszczynska H, Reed D, et al. Agricultural injuries among older Kentucky farmers: the farm family health and hazard surveillance study. *Am J Ind Med*. 1998 Apr;33(4):341–53.

^gGuo HR, Tanaka S, Halperin WE, et al. Back pain prevalence in U.S. industry and estimates of lost workdays. *Am J Public Health*. 1999 Jul;89(7):1029–35.

^hLipscomb H, Kucera K, Epling C, et al. Upper extremity musculoskeletal symptoms and disorders among a cohort of women employed in poultry processing. *Am J Ind Med*. 2008 Jan;51(1):24–36.

ⁱLyman S, McGwin G Jr, Enochs R, et al. History of agricultural injury among farmers in Alabama and Mississippi: prevalence, characteristics, and associated factors. *Am J Ind Med*. 1999 May;35(5):499–510.

^jMcGwin G Jr, Scotten S, Aranas A, et al. The impact of agricultural injury on farm owners and workers in Alabama and Mississippi. *Am J Ind Med*. 2000 Apr;37(4):374–81.

^kRespiratory Disease

^lHoppin JA, Umbach DM, London SJ, et al. Pesticides and atopic and nonatopic asthma among farm women in the Agricultural Health Study. *Am J Respir Crit Care Med*. 2008 Jan;177(1):11–8.

^mHypertension

ⁿDiabetes

Health Program contractors reported different respiratory *diseases*, such as asthma, bronchitis, dyspnea, pneumonia, pertussis, and prolonged cough, whereas most studies documented respiratory *problems* such as chronic cough and wheezing. One study reported a prevalence of 2.7% (asthma) and 0.8% (chronic bronchitis) among female farmworkers, which were lower than the prevalence found in this study.⁴⁶

Hypertension and diabetes prevalence. Similar to a recent survey that reported diabetes and hypertension as the most common health issues among MSFWs in the Eastern Migrant Stream,⁵ New York State also identified hypertension and diabetes as common diseases for which health providers saw MSFWs. The prevalence of hypertension and diabetes were not included in the survey's results, and few known studies have assessed the prevalence of diabetes or hypertension among the MSFW population (see Table 3). Previous data showed that the prevalence of diabetes among Hispanic farmworkers ranged from 3.9% to 8.2%, and the prevalence of hypertension ranged between 23.7% to 36.4%, considerably higher than the current study.²⁷

There are limitations that must be considered when drawing conclusions from this study. Gender was not collected. When the MSFW Health Program was first established in 1988, MSFWs were assumed to be single men, but as suggested by national and NYS data, more MSFW families are traveling together. Data on the proportion of MSFWs that returned to the contractors' catchment areas each year compared to entirely new MSFWs were unavailable. The demographic composition of the MSFW population varied each year, suggesting that while some MSFWs may have returned to the contractors' catchment areas, new MSFW populations were also identified.

The potential for duplication exists in the demographics, which is a concern for any count of MSFWs. Some of the contractors provided services in the same counties and it is possible that services were occasionally provided to the same MSFWs. Efforts were made to reduce double-counting by limiting demographics data to those MSFWs who received services directly from each contractor.

Further, the data were reported aggregately on the contractor's reports, making it difficult to determine how many MSFWs received testing and diagnosis for each disease condition. Population samples could not be used to determine disease prevalence. The population estimates provided by the six contractors might contribute to the variation of prevalence observed over the study period. The variation could also be due to changes in the MSFW population or to real observed changes in prevalence.

It is challenging to establish an accurate MSFW population denominator because of the migratory nature of the population and the fact that there is no one agency (public or private sector) that oversees the MSFW population. The issues surrounding MSFW population estimates have been well-documented.^{34,47-49} These challenges make it difficult to know exactly how many MSFWs reside in NYS and thus to assess whether the estimated disease prevalence in this study over- or under-represents disease prevalence. If MSFWs are unwilling to seek health care services unless injury or illness prevents them from working, it is possible that the estimated prevalence may be lower than the true prevalence of disease in this population.

Conclusion

Although there are many complexities associated with conducting research and surveillance among MSFWs, understanding the health status of this disparate population is essential. National data suggest that approximately 75% of MSFWs do not receive any type of health care service.⁵⁰ The increase in number of families and the decrease in non-Hispanic MSFWs may significantly affect the service needs among MSFWs, such as an increased need for women's health services and Spanish interpreters.

The seasonal migratory lifestyle of MSFWs can limit providers' ability to plan in conjunction with their needs. Unlike other studies, this research demonstrated how the MSFW population in NYS changed during the study period and identified how the estimated disease prevalence in the MSFW population varied each year. It is important for organizations and programs to recognize these changes in the MSFW population to determine appropriate services. For example, identified cases of pertussis among MSFWs and an outbreak of varicella in a migrant labor camp prompted a joint effort between the MSFW Health Program and the NYS Dept. of Health Immunization Program to provide immunizations to MSFWs and their families (Polletta V: New York State Department of Health, personal communication, April 2, 2008). Continued research such as using data from the NYS MSFW Health Program's contractors can help identify best practices that may be useful for MSFW health programs in other states.

It is important to establish the most accurate MSFW population estimate possible to assess health status and to guide resource allocation. In 1993, a labor demand method to enumerate the number of MSFWs in the United States was developed⁵⁰ and recently, similar studies have been conducted in several states.⁵¹⁻⁵⁵ There is a great need to regularly conduct these studies in each state.

This study was the first time the disease prevalence for many of these conditions were reported among MSFWs in NYS, which constitutes an important first step towards improving health services for MSFWs and their families. However, developing a plan for continuity of services as MSFWs and their families travel the Eastern Migrant Stream is necessary to improve health outcomes in this population. Although there are limitations to any MSFW data, other states are encouraged to publish their MSFW data to foster a better understanding of the health of this population and to prompt dialogue for improving the services provided. Ultimately, strong collaborative efforts among federal, state, and local agencies will be needed to improve the health and well-being of this dynamic population.

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