

# Dental Health of Puerto Rican Migrant Workers

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**E**ACH summer approximately 2,600 male migrant workers are employed in Massachusetts in truck farming, horticulture, or the harvest of apple, cranberry, and tobacco crops. Approximately 1,600 of these workers emigrate from Puerto Rico for a period of 6 months.

There are two categories of Puerto Rican migrants—contract workers and noncontract workers. Contract workers are organized and represented by the Department of Labor, Commonwealth of Puerto Rico, which negotiates arrangements with the growers. The workers are guaranteed a fixed wage and obligatory medical, life, and disability

insurance. On the other hand, the noncontract workers, who obtain employment and transportation to the farms independent of any government agency, have no form of health insurance. No provisions have been made for dental health services for either group in Puerto Rico or during their work as migrants.

In Massachusetts, the Migrant Health Project funded by the Public Health Service is the advocate for all migrant workers, particularly in health services. Without the intervention of the Migrant Health Project, there would be no organized provisions for dental health services.

The plight of the migrant

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worker has been well documented, but little has been done to alleviate his dismal status (1). We conducted a study to evaluate the dental health of male farmworkers from Puerto Rico, aged 18–64 years, and to compare it with that of all U.S. males of the same ages, as determined from data of the National Health Survey (2, 3), by comparing mean counts of decayed, missing, and filled teeth.

### Method

The farms employing migrant workers were grouped according to three geographic divisions defined by the Migrant Health Project; western, northeastern, and southeastern Massachusetts, with Amherst, Tewksbury, and Lakeville as centers. Migrant workers in each of these areas were examined for DMF tooth components. The recorder of the findings was also an interpreter. Before starting the actual examinations, the three examiners collaborated in the examination of a group of persons in order to standardize the examination criteria. Each survey team consisted of one examiner and one interpreter.

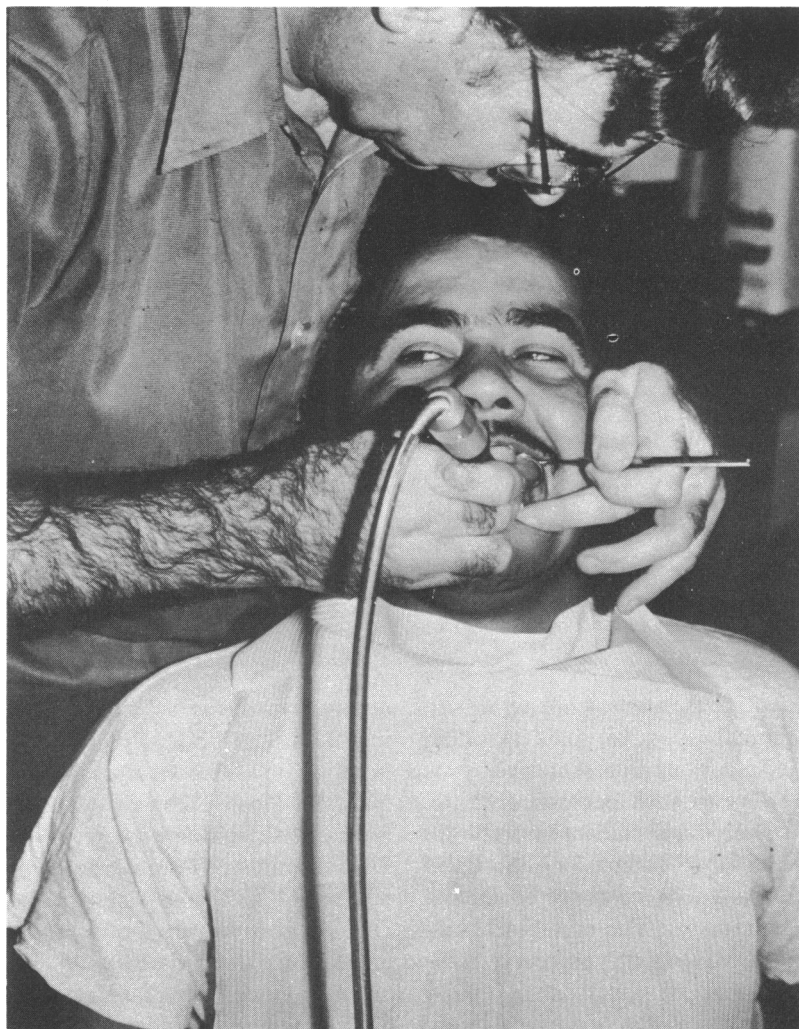
A random sample of farms in each area was selected, and, in the course of the survey, each team spent approximately equal time in the three different sections of the State.

A standardized technique was used to examine each patient, employing mirror, explorer, portable light, and an available chair. The following criteria were used:

1. An erupted tooth was any tooth that could be touched by an explorer.

2. Third molars were disregarded. For the purpose of this study only 28 teeth were at risk.

3. Dental caries was diagnosed only where a softened cavity floor



and broken-down enamel could be demonstrated.

4. A tooth that had been restored but was also carious was considered "decayed."

5. A filling was any amalgam, gold, silicate, or acrylic restoration. A temporary restoration was considered a filling.

6. A tooth was considered missing if the appropriate position in the dental arch was clinically edentulous.

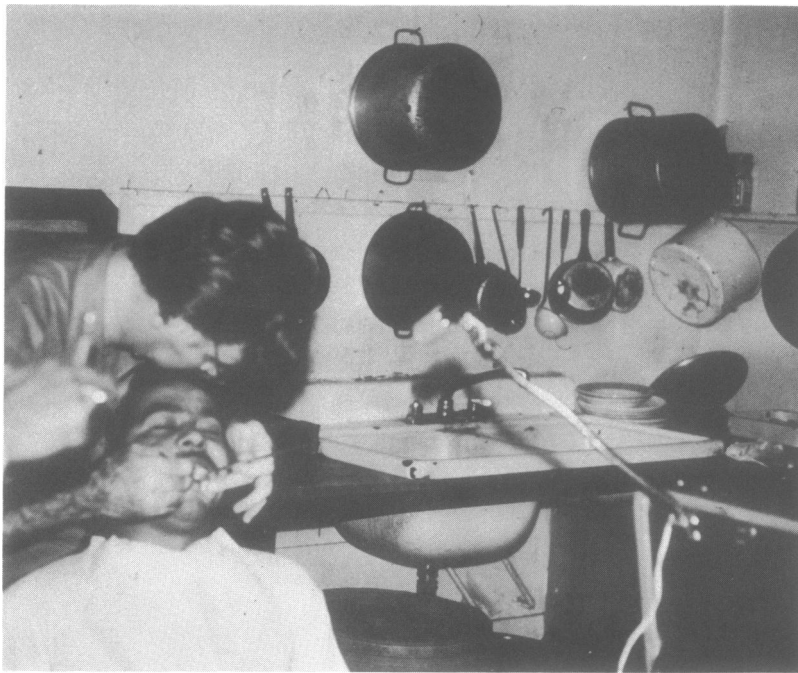
7. If, in the opinion of the examiner, a tooth was indicated for extraction it was labeled "missing."

Diagnoses were made without alteration of the oral environment. Debris and calculus were

not dislodged for consistency with the criteria used in the National Health Survey of 1960–62.

### Results

During the course of 3 months, 390 Puerto Rican men were examined; 23 of these were edentulous. The mean DMF counts and their components for the sample and all U.S. males are shown in table 1. The table presents the data in two sections—one includes edentulous men, and the other excludes them. Because there is no way to determine the true proportion of edentulous Puerto Ricans, the data excluding



degree the absence of dental care available to the migrants.

The U.S. male population demonstrated a much larger filled-tooth component than the migrants; the U.S. values ranged in excess of 10 times their corresponding value for the migrants. Thus, the DMF count alone is of no value in evaluating present dental status or predicting needs for dental care. A DMF count of 28 may represent 28 missing teeth (with or without suitable dentures), 28 filled teeth, or 28 carious teeth that require restoration.

### Unmet Restorative Treatment

To measure unmet restorative treatment needs (UTN), the ratio of mean decayed teeth to mean decayed teeth plus mean filled teeth expressed as a percentage was determined. This was calculated according to the following formula:

$$UTN = \frac{\text{mean number of decayed teeth}}{\text{mean numbers of decayed teeth and filled teeth}} \times 100$$

edentulous persons are shown to eliminate possible bias resulting from an unrepresentative proportion of such persons.

The data indicate that the mean DMF counts for U.S. males are almost twice those of Puerto Rican males. The components of the DMF count, however, indicate that migrants have almost twice as many decayed teeth,

nearly two-thirds as many missing teeth, and only a fraction the number of filled teeth. In the National Health Survey, 32 teeth were considered at risk for the DMF counts. Despite the four additional teeth at risk in the U.S. data, however, the migrants experienced significantly higher mean counts of decayed teeth. This differential reflects to some

**Table 1. Mean counts of decayed, missing, and filled teeth for Puerto Rican migrant workers and all U.S. males<sup>1</sup> aged 18-64 years**

Age group (years)	Number of migrants	Decayed teeth		Missing teeth		Filled teeth		Total DMF teeth	
		Migrant males	U.S. males	Migrant males	U.S. males	Migrant males	U.S. males	Migrant males	U.S. males
Including edentulous persons									
18-24.....	137	3.8	2.1	2.5	5.0	0.5	7.2	6.8	14.4
25-34.....	102	3.0	1.7	4.4	7.3	.6	8.3	8.0	17.3
35-44.....	62	2.2	1.2	8.0	10.0	.7	8.1	10.9	19.3
45-54.....	67	2.0	1.0	11.0	15.6	.4	5.1	13.4	21.6
55-64.....	22	1.0	.7	14.6	21.4	.1	3.3	15.7	25.4
Excluding edentulous persons									
18-24.....	137	3.8	2.1	2.5	4.7	0.5	7.3	6.8	14.1
25-34.....	100	3.1	1.8	3.9	6.5	.6	8.5	7.6	16.8
35-44.....	57	2.4	1.3	6.2	8.4	.8	8.7	9.4	18.4
45-54.....	55	2.4	1.3	7.3	11.0	.5	6.5	10.2	18.8
55-64.....	18	1.2	1.1	11.7	15.2	.1	5.2	13.0	21.5

<sup>1</sup> Data on U.S. males from references 2 and 3.

**Table 2. Ratios of unmet restorative treatment needs (UTN) for Puerto Rican migrant workers and all U.S. males, aged 18-64 years**

Age group (years)	Percent	
	Migrant males	U.S. males <sup>1</sup>
18-24.....	88	22
25-34.....	84	17
35-44.....	75	13
45-54.....	83	17
55-64.....	92	17

<sup>1</sup> Data adapted from reference 3.

This ratio provides information concerning the proportion of decayed and filled teeth that have not been treated. While this mean ratio should be calculated from summations of the ratio for each person, the necessary data were not available from the National Health Survey.

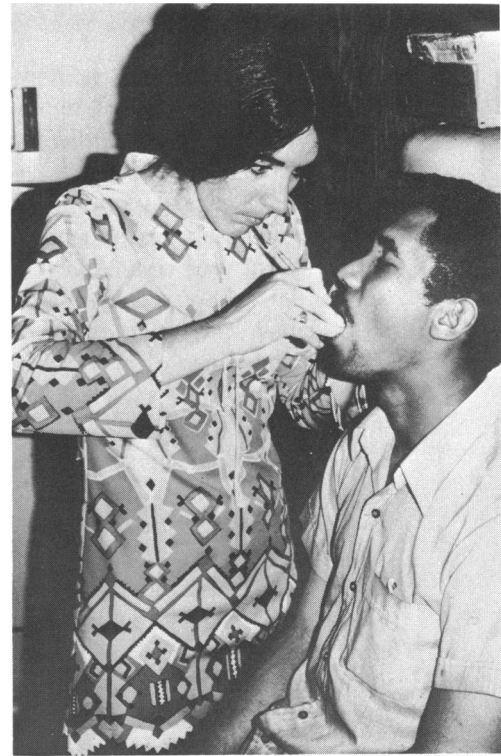
The age-specific UTN ratios for dentulous males are shown in table 2. The unmet restorative treatment needs for all U.S. males ranged from 13 to 22 percent, while the range for migrants was 75 to 92 percent. It is clear that

the migrant workers are receiving substantially less restorative treatment than the general population.

### Discussion

The findings of this study were not analyzed statistically because the persons examined did not comprise a random sample. While the National Health Survey includes a highly stratified, multi-stage sample, our study group may be described as a convenience sample of all male Puerto Rican migrant workers. Thus, the differences observed must be considered real ones and evaluated in terms of their magnitude.

The mean DMF counts of the Puerto Ricans were approximately half those of all U.S. males, although the differential was somewhat less marked in older age groups as the missing-tooth component increased. These differences may be associated with a number of factors including diet, race, socioeconomic status, and exposure to waterborne fluorides. Although fluoridation of Puerto Rican water supplies was initiated around 1958, the proc-



ess has been erratic. Monitoring of fluoride levels is almost nonexistent (4).

Despite the four additional teeth at risk in the U.S. sample, the migrants experienced significantly higher mean numbers of decayed teeth. This differential apparently reflects to some degree the absence of dental care utilization among the migrants.

The U.S. males had more missing teeth than the Puerto Rican males. Overestimation of DMF counts because of unerupted third molars was considered in the U.S. study. Exaggeration of DMF counts for the age group 18 to 24 years as a result of including unerupted third molars was concluded to be at least 0.4 and not more than 2.1. Excluding edentulous persons (table 1), the differences in mean numbers of missing teeth between Puerto Rican and U.S. males approached the levels of overestimations expected on the basis of including third molars, as was done in the data for all U.S. males (2,3).

Whether the data include or



exclude edentulous persons, however, the U.S. males had significantly more fillings than did the migrants (table 1); this may indicate a higher caries rate in the U.S. population. Erupted third molars, too, contribute to the differential. Increased availability of dental services accounts for the preponderance of mean filled teeth in the U.S. sample over those of the migrant workers.

Mean DMF counts do not provide a sound basis for the allocation of restorative treatment resources. Based on the mean DMF counts in table 1, priority would be assigned to the U.S. males. However, the ratios of unmet restorative needs demonstrate a different level of need (table 2). These ratios may help to provide a logical basis for the comparison of groups in need of restorative services and the meaningful assignment of priorities.

Attempts have been made to provide dental treatment for migrant workers in Massachusetts; however, this has been difficult. Migrant workers obviously live in rural areas where dental health services are generally in short supply. Furthermore, migrants must work in the fields during conventional office hours or else lose income, the very reason for their coming. Clearly, the delivery of health services to this forgotten group constitutes a serious and special problem.

Dental care has been provided through the utilization of private dental offices and special mobile treatment units. The support of private dentists was enlisted through notices in professional publications. Health aides encouraged migrants to seek dental care and drove them to and from dental offices.

In addition, five mobile dental treatment units were established. Each unit included a dentist, dental student, dental hygienist, and a translator if one of the three dental workers was not bilingual. Each mobile unit's workers were supplied with a station wagon and portable dental equipment.

The equipment chosen was the Beldent portable dental unit, a compact 18- by 12- by 6-inch Samsonite case weighing 28 pounds. The unit is equipped with a working light; a pulp tester; a drill assembly with adequate torque and speeds ranging from 1,000 rpm to 20,000 rpm; a wax spatula and gutta percha remover; an amalgamator; and an electro-surgery and coagulation unit. The unit works on standard current or on current from a rechargeable battery for at least 6 hours (the maximum operating time at the farms). The unit was surprisingly versatile, compact, and remarkably effective.

Visits to the camps were made in the evening, after working hours, by the dental care team. The portable clinics were often set up in dining areas, bunkhouses, and lavatories.

The program in terms of participation by patient and provider has been deemed successful, although further analysis of feasibility and cost must be investigated. Perpetuation of the program presently is in jeopardy because of limited funds and because of the voluntary aspects of the program.

### Conclusions

Counts of mean DMF teeth for migrant Puerto Rican workers in Massachusetts are considerably lower than corresponding age-specific counts for all U.S. males.

However, the mean components for filled teeth are much lower and for decayed teeth much higher in the migrants. A great differential in the availability and utilization of dental services is apparent.

The measure of unmet restorative treatment needs used to adjust for differences in total DMF counts enables useful comparisons of the need for dental restorative treatment. Conventional mean counts of DMF teeth fail to provide meaningful measures of need for dental treatment.

Numerous obstacles to seeking dental care have been observed in migrant workers. These include availability for appointments, transportation, motivation, and language barriers. Special programs must be developed to provide dental care. While existing dental offices may provide a certain proportion of services required, special facilities such as mobile clinics operating after normal working hours are essential.

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