

ORAL HEALTH STATUS OF CHILDREN OF MIGRANT FARMWORKERS  
IN NORTH CAROLINA

By  
Betty J. DeBerry-Sumner

DDS, 1977, University of California, San Francisco  
MPH, 1987, University of North Carolina, Chapel Hill

A Research Protocol submitted to the core faculty and Advisory Board Members of  
North Carolina Dental Public Health Residency Program in partial fulfillment of  
the requirements for the certificate of

Dental Public Health Residency

North Carolina Department of Human Resources  
Division of Health Services  
Dental Health Section  
(1987-1988)

Approved By:

\_\_\_\_\_  
Gary Rozier, DDS, MPH

\_\_\_\_\_  
G. Dudney, DDS, MPH

Oral Health Status of Children of Migrant  
Farmworkers in North Carolina

Resource ID#: 3336

## TABLE OF CONTENTS

I.	Background and Problem	1
	A. Overview.....	1
	B. Definition of Migrant Farmworker.....	2
	C. They Follow the Sun.....	3
	D. Population Estimates.....	4
	E. Racial Composition.....	4
	F. Federal Assistance.....	4
	G. Problem.....	4
II.	Review of the Literature	5
	A. Introduction.....	5
	B. Dental Surveys.....	8
	C. Dental Knowledge and Health Behavior.....	9
	D. State and Local Dental Programs.....	10
	E. Conclusions.....	10
III.	Purpose and Objectives	10
	A. Purpose of Study.....	11
	B. Objectives.....	11
IV.	Research Design and Methodology	11
	A. Introduction.....	11
	B. Sample Description.....	13
	C. Sample Design.....	15
	D. Procedure Delineation.....	15
V.	Data Collection Methods	16
	A. Data Collection Instruments and Conceptual Definition.....	18
	B. Operation Definition.....	18
VI.	Data Analysis and Reporting Plans	19
	A. Data Management.....	19
	B. Data Analysis.....	19
VII.	Bibliography.....	21

VIII.

Appendices

Consent Form/Health History  
Parent and Student Questionnaire  
Clinical Examination Form  
Diagnostic Criteria for Caries  
Dental Restorative, Sealant, and Exodontia  
Treatment Needs  
Community Periodontal Index of  
Treatment Needs (CPITN)  
Migrant Project Directors Questionnaire  
Survey Class Roster  
Informational Brochure  
Follow-up Letter  
Referral Form  
Clinical Codes  
Participating Schools  
Survey Schedule  
Survey Maps  
Certification of Eligibility  
Examiner ID Number  
SES Information

## I. BACKGROUND AND PROBLEM

### A. Introduction

"Into whatever community a migrant goes, his status is the lowest in the social scale. His labor is welcome, but he is not... (His) problems...are not unlike those of the low income resident of a rural community. ... Yet (he) receives even less care than the needy resident... The typical farm community is completely unprepared to meet the expanding needs he presents. Limited local facilities, restricted tax support, and insufficient medical and nursing personnel are among the obstacles to providing him adequate care. Added to these are the restrictive laws, practices and attitudes that severely limit medical aid to the nonresident."<sup>85</sup>

The 42 states where migrants travel from one farming area to another depend upon this migration of farmworkers to satisfy their labor needs.<sup>33</sup> The states with the largest number of hired seasonal and immigrant farm labor are; California, Texas, Florida, Michigan, Washington, Minnesota, and North Carolina.<sup>5</sup>

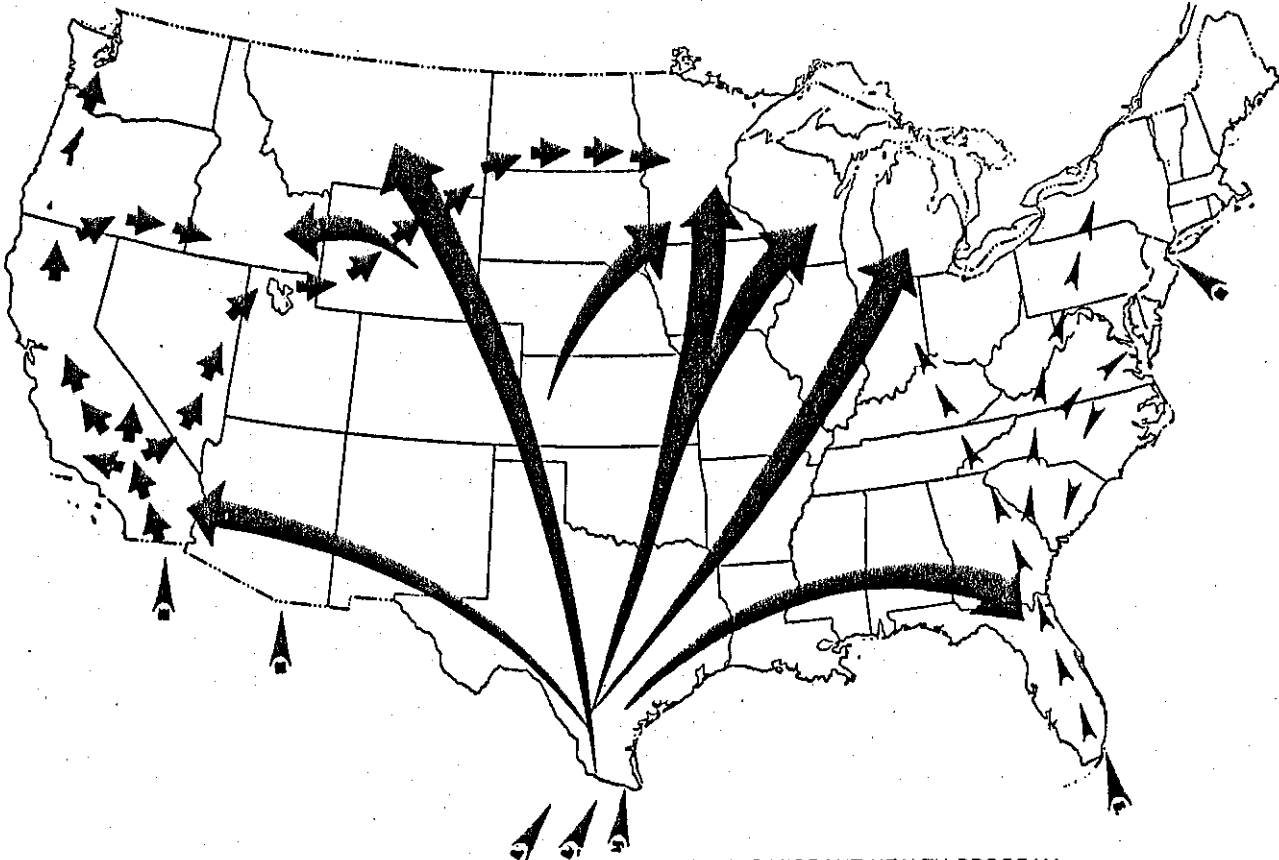
### B. Definition of Migrant Farmworker

The lack of a standard definition of who is a migrant or seasonal farmworker is a problem which persist throughout government agencies. To ensure adequate allocation of funds to serve the health care needs of the migrant and seasonal farmworkers, it became necessary to have accurate data on their prevalence and distribution.

The Departments of Agriculture, Labor, Health and Human Services, and Education all use different standards for counting the farmworker population. The lack of uniformity prevents comparability of data among the agencies.

The Office of Migrant Health, Department of Human Services states that, a Migratory agricultural worker is defined as, "an individual whose principal employment is in agriculture on a seasonal basis, who has been so employed within the last 24 months, and who establishes for the purposes of such employment a temporary abode." A Seasonal agricultural worker is "an individual whose principal employment is in agriculture on a seasonal basis, who has been so employed within the last 24 months, and who is not a migratory agricultural worker." Agriculture is defined as, "farming in all its branches, including: (a) cultivation and tillage of the soil (b) the production, cultivation, growing, and harvesting of any commodity grown in or on the land, and (c) any practice (including preparation and processing for market and delivery to storage or to market or to carriers for transportation to market) performed by a farmer or on a farm or a farm incident to or in conjunction with an activity described in subparagraph (b)."<sup>76</sup>

**Figure 1. Movement of Migrant Farmworkers  
The Major Migrant Streams**



SOURCE: PROBLEMS IN THE STRUCTURE AND MANAGEMENT OF THE MIGRANT HEALTH PROGRAM  
HRD - 81-92  
MAY 8, 1981

- Western Stream
- Eastern Stream
- Midwestern Stream

The Economic Research Service of the U.S. Department of Agriculture defines seasonal farmworkers as persons who performed 25-149 days of farm wage work in one year.<sup>33</sup> The Department of Education, Office of Migrant Education has yet another definition of migrancy. Their definition of a migrant child is one whose parents work in agriculture, food processing, fishing, or fishery related industries. Children whose families have settled out of the migrant stream are still classified as "formerly migrant" for 5 years after settlement. The Office of Migrant Education implemented a system called Migrant Student Record Transfer System (MSRTS) which was to identify and track children as they transfer between school districts serving migrant children, thereby improving the continuity of education and health records. MSRTS data are collected by migrant school recruiters who visit migrant camps to register children of school age not currently enrolled in school. MSRTS only identifies children living in rural areas and does not reflect children living in urban communities, nor does it give information on the families of the children.<sup>32</sup>

### C. They Follow the Sun

The itinerant lifestyle of migrant farmworkers and the associated problems are well documented in numerous studies.<sup>2,3,5,33,37,71</sup> These nomadic workers are noted for following the sun to harvest crops for our nation's consumption.<sup>2</sup> In so doing they have established patterns of travel which are referred to as "migratory streams" inclusive of the Eastern, Midwestern, and the Western streams. (see Chart 1) Migrant farmworkers from Florida and other Southeastern states enter the East Coast migratory stream usually about late April, May or in June to follow routes east of the Appalachians, some may go to the Midwest and further west.<sup>31</sup> In the fall when work in the North is no longer available they return to the south. According to the Migrant Ministry Committee of the North Carolina Council of Churches, North Carolina is the largest receiving state for migrant farmworkers in the East Coast migratory stream. Approximately 70,000 farmworkers and their dependents enter North Carolina during the growing season (late April-November) to expand the status of the roughly 140,000 seasonal farmworkers who live in the state year round.<sup>74</sup>

The Midwestern Stream comprising the Central States, originates primarily in south Texas with workers dispersing in many directions, the majority going to Michigan, Ohio, Indiana, Illinois, Iowa, Minnesota and other Midwestern states. Texas and the Southwest provide the base for the Western Stream. Travel within this stream varies significantly among the farmworkers, in that some workers travel only within a single state, while others travel from Texas to the Pacific Northwest and back. Weather, crop conditions, price fluctuations and other factors affect work opportunity and influences the directions a migrant family or group may take. These uncertainties accounts for the interchange which exists within and between the streams. Characteristic of all the streams is that some migrant workers travel a few hundred miles while other workers travel more than a thousand miles as they follow the "sun/season/crop" north in the spring and return south in the fall.

Following the sun does not always guarantee available jobs in agriculture (due to variability of the weather, crop conditions, availability of new technology, and other factors) or in other sectors of the economy. The supply of unskilled and uneducated persons within and without the U.S. borders is greater than the demand, which leads to high levels of unemployment and underemployment, and a shifting back and forth between temporary farm and nonfarm labor jobs. This transitory lifestyle prevents many migrant workers from establishing permanent domiciles in states where they find employment. Benefits afforded residents are usually denied the migrant farmworker, resulting in inadequate health care and substandard housing. Often language barriers exist, broadening the gap between the community and migrant farmworkers.<sup>2,3,33,37</sup>

#### D. Population Estimates

The Migrant Health Program estimates the total target population for migrant and seasonal farmworkers for the nation to be 3.5 million. Of this total, 0.75 million were migrant workers and family members, two million were hired seasonal farmworkers and family dependents working in the same counties where migrants were employed, and 0.8 million were hired seasonal farmworkers and family dependents working in counties without migrants.<sup>1</sup> Child labor comprise about 25 percent of all farm labor in the U.S.<sup>70</sup> In 1982, according to the Department of Labor, 397,000 children aged 8-15 years were estimated to have worked in agriculture compared to 1.2 million adults.<sup>71</sup>

The U.S. Department of Agriculture reported a decrease in migrant farmworkers of almost 50 percent between 1949-1979, from 422,000 to 217,000 farmworkers. These estimates were based on data obtained in December 1979 from Supplementary questions from the 1983 Current Population Survey of the Bureau of the Census. Data collected did not include Puerto Rico, Foreign Nationals, farmworkers who left the area in the winter, non english speaking workers, and undocumented workers, accounting for the underestimation or decrease in farmworkers.<sup>77</sup>

#### E. Racial Composition

In 1979, 53 percent of the migrant farmworkers in the Western Stream (California, Nevada, and Arizona) were hispanic and about 34 percent of the migrant farmworkers in the 8 southern states ( Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, and Florida ) were black. According to the 1987 North Carolina Employment Security Commission's estimates, 60 percent of migrant farmworkers are hispanic, 30 percent black, less than 10 percent Haitian, and 1 percent white. According to the Employment Security Commission, the number of white migrant farmworkers are declining annually and the number of Haitian migrant farmworkers vary from year to year. The number of hispanic migrant farmworkers in the east coast stream is increasing annually, with more hispanics entering North Carolina from Central America.

## F. Federal Assistance

In the late 1950's an attempt was made to bridge the gap between the migrant farmworkers and access to health care. Congress established a committee to investigate the lack of sanitary conditions and inadequate immunization which posed serious health problems for migrants and seasonal farmworkers. The hearings concluded in 1961, with the Senate Committee on Labor and Public Welfare confirming that migrant and seasonal farmworkers had a high level of need and a low level of health care, and that no county or state had been able to cope with the problem. Subsequently Congress enacted Public Law 87-692 (76 Stat. 592) in September 1962, amending Title III of the Public Health Service Act of 1944, allocating federal grant money to stimulate state and local health programs to provide needed health care to migrants and seasonal farmworkers.<sup>5</sup>

The Migrant Health Act (Public Law 87-692) signed into law by President Kennedy in September 1962, added section 310 to the Public Health Service Act. This authorizing legislation began supporting health centers in rural areas to serve the migrant and seasonal farmworkers. To date there are 122 migrant health centers operating 378 clinics with 86 in house dental facilities in over 300 geographic rural areas in 35 States and Puerto Rico.<sup>1</sup> These clinics serves more than 450,000 migrant and seasonal farmworkers representing only 15 percent of the estimated migrant and seasonal farmworker population of 3.5 million.<sup>1</sup>

The appropriation level for the Migrant Health Program had been increasing since 1962 from \$3,000,000 to \$45,400,000 for fiscal 1986 and 1987. In the wake of the October 19 stock market crash, the pressure to cut the federal budget was reflected in the overall 3 percent increase in Public Health Service, which was below the 1987 inflation level of 3.7 percent. Funds for AIDS programs increased, whereby, funding for a number of other programs received cuts. The Migrant Health Program appropriation for fiscal 1988 was reduced from \$45.4 million to \$43.5 million.<sup>13</sup> With funding cuts it became increasingly more apparent that a collaborative effort was necessary to meet the needs of the migrant population. Because the federal Migrant Health Centers are able to meet the needs of only 15 percent of the 3.5 million migrant and seasonal farmworkers, some state and local programs have begun to develop strategies to meet the need of some of the remaining 85 percent untreated migrant and seasonal farmworkers documented.

## G. Problem

There are no available data on the oral health conditions of children of migrant farmworkers in North Carolina and limited data available describing the oral health status of migrant children in other states.<sup>2,7,22-30,37,39,52,83</sup> National and statewide dental surveys conducted during the early 1970's have reported a significant decline in dental caries among U.S children.<sup>34,35,79,80</sup> This decline is due primarily to fluoridated community water supplies, school-based fluoride programs, use of fluoridated dentifrice, and the use of dental sealants. However, because of the transitory life-style, low socioeconomic status, low education attainment of parents, geographic location, and access to health care of migrant children, the prevalence of dental disease among migrant children is expected to be greater than that experienced by resident U. S. children.



MIGRANT ORAL HEALTH STUDIES

Study/Author/State	Year	Migrant Stream	Sample (N)	Sample Methodology	Race	Age (Years)	DMFT	DMFS	dft/def
<u>A Report of the Dental Program for Migrants.</u> Arra, MC Endeavor, Wisconsin	1965	Midwestern	75	Convenience	Hispanic	5-12	5.5		
<u>A Study of Dental Needs, DMF, def, and Tooth Eruption in Migrant Negro Children.</u> Bachand, RG., Gangarosa, LP, Bragassa, C. Monroe Co., NY	1966	Eastern	61	Census Sample	Black	5-12	1.6		
<u>Budgeting Dental Care for Indigent Children.</u> Abrams, WZ., Tappan, NW New Jersey	1966	Eastern	89	Convenience	Puerto Rican Mixed Group	5-12			
<u>Dental Health of Puerto Rican Migrant Workers.</u> Gluck, GN., Knoz, CD., Glass, RL., Wolfman, M. Massachusetts	1972	Eastern	390	Convenience Sample	Puerto Rican	18-64			
<u>The Oral Health Status of Migrant and Seasonal Farmworkers and Their Families in Florida.</u> Avery, KT. St. Johns River Basin, Florida	1972-73	Eastern	454	Convenience	Black	6-11	1.07	2.3	
<u>Dental Health of Migrant Agricultural Workers.</u> Avery, KT St. Johns River Basin, Florida	1972-73	Eastern	115	Random Sample	Black	18-64	14.0		
<u>The Dental Health of Children of Migrant and Seasonal Agricultural Farmworkers.</u> Avery, KT St. Johns River Basin, Florida	1972-73	Eastern	644	Convenience	Black	6-11	1.07	1.49	2.29
<u>Dental Health in a Group of Migrant Children in Conn.</u> Ragno, J., Castaldi, CR Connecticut	1975	Eastern	400	Convenience	Hispanic	3-16 6-9 10-12		1.3 2.1	

MIGRANT ORAL HEALTH STUDIES

Study/Author/State	Year	Migrant Stream	Sample (N)	Sample Methodology	Race	Age (Years)	DMFT	DMFS	dft/def
<u>Oral Health Findings in a Minnesota Latino Population.</u> Cisneros, MC., DiAngelis, AJ., Katz, RV Ramsey Co., Minnesota	1977	Midwestern	156	Convenience	Latinos	2-82 6-12	13.65 5.32(DMFT/dft)		
<u>Dental Health of Children of Migrant Farmworkers in Hartford, Connecticut.</u> Cipes, MH., Castaldi, CR. Hartford, Connecticut	1978	Eastern	513	Convenience	Hispanic	3-17 6-9 10-12	1.5 2.7		
<u>Dental Needs in Children of Mexican-american Migrant Farmworkers.</u> DiAngelis, AJ., Katz, RV., Jensen, ME., Pintado, M., Johnson, B. Red River Valley, Minnesota	1978	Midwestern	578	Census	Hispanic	3-13	3.1	4.0(DMFS/dfs)	
<u>Oral Health of Children of Migrant Farmworkers in Northwest Michigan.</u> Woolfolk, M., Haward, M., Bagranian, RA Michigan	1982	Midwestern	203	Convenience	Hispanic	5-14	2.2	2.9	2.9 4.8
<u>Dental Caries in Permanent Teeth in Children of Migrant Farmworkers.</u> Call, RL., Entwistle, B., Swanson, T. Colorado	1984	Western	534	Convenience	Hispanic	6-15	3.56		

## II. REVIEW OF THE LITERATURE

### A. INTRODUCTION

The literature was reviewed to determine the extent of health research specific to the oral health status of children of migrant farmworkers and to identify the dental knowledge and behavior patterns of parents as well as children of migrant farmworkers. Dental literature describing the oral health status, dental knowledge and behavior patterns of these children and their parents is limited. The following is a review of the literature which describes caries experience of Black and Hispanic migrant children of farmworkers in different states. A table identifying the study and its methodology is presented.

### B. Dental Surveys

In 1965, Arra examined 75 hispanic children ages 5-12 years in migrant camps and a health clinic in Wisconsin and reported a mean DMFT score of 5.5. Only 16 percent of children were caries free, and 0 percent had decayed teeth filled. The methodology and criteria employed was not described in this study. However, the report does suggest ways of increasing access to care for these children due to the high proportion of unmet treatment needs. 66

Bachard, R.G. et al. (1966), examined and compared 61 black schoolchildren of migrant farmworkers aged 5-12 living in Monroe, New York with 118 urban black children of the same age and described the DMFT, deft, dental needs and tooth eruption pattern of these children. The mean DMFT score per child was 1.6. Caries prevalence was reported as being greater among the urban black children than among migrant children; however, the proportion of decayed and unfilled teeth was greater among the migrant children. Less than .5 percent of decayed teeth were filled.<sup>30</sup> One dentist was the examiner for all the children. Intraexaminer reliability was not mentioned. Authors did indicate that the methodology employed was similar to USPHS National Health Survey, 1965. The sample was a convenience census sample of children.

Gangarosa (1966) described the dental care received by the children examined in the study above, Bachard et al., in Monroe Co., New York and found that migrant children showed almost a complete lack of restorative treatment (7 fillings were found in 1,530 permanent and primary teeth), indicating a high degree of unmet treatment needs and poor oral health.<sup>40</sup>

In 1966, Abrams et al. conducted a study using 89 Puerto Rican children in New Jersey to determine what it would cost to treat indigent children in a dental practice. Using x-rays as one of the diagnostic tools, the study showed that each child would require 3 hours of treatment to meet their dental health needs because of the low level of restorative and preventive care previously received. The mean DMFT with x-rays was 5.5, without x-rays, the mean was 4.6. Only .7 percent of decayed teeth had been treated. Data show that without the use of x-rays 20 percent of required work would not have been noted.<sup>64</sup>

A Ten State Nutrition Status Assessment conducted on Mexican American children of migrant farmworkers in 1970 reported high prevalence of decayed teeth among children aged 2-15 years. 31 percent of children experienced 1-4 mean DMFT and 16 percent had 5 or more DMFT. Deficiencies of vitamin A and D, prompted investigators to determine a correlation between the high incidence of decay and the deficiency of vitamin A and D found in these children. The methodology used to measure caries experience was not mentioned.<sup>28</sup>

Oregon State Board of Health received federal funds in 1963 for five years to provide health services to migrant farmworkers and dependents. In 1970 a migrant health survey was conducted to document progress and dental need of the migrant population and to establish a basis for dental care funding. The methodology was not described. The study reported a combined mean DMFT/def score of 4.71. 59 percent of children aged 2-15 years were classified as having early to moderate caries, when they had pit and fissure lesions or caries visible with a probe, respectively, while 21 percent required urgent dental care (teeth decayed to gum line or abscessed).<sup>51</sup>

Gluck et al. (1972) examined a convenience sample of 390 male Puerto Rican migrant farmworkers in Massachusetts to determine their oral health status and need. When migrant men aged 18-24 years were compared to US males, the migrant men had a higher mean number of decayed teeth (3.8) than U.S. males (2.1). The overall DMFT score (6.8) for migrant men was lower than that of US men (6.8), due to the lower number of filled teeth (.5 FT) experienced by migrant men. Methodology was reported to be similar to National Health Survey, 1965. Unmet needs for migrant men was 88 percent compared to 22 percent for U.S. men.<sup>29</sup>

Avery (1972) compared the dental health of 454 black children ages 6-11 of migrant and seasonal farmworkers in Florida and found that children of seasonal farmworkers experience more dental disease and received less treatment than children of migrant farmworkers. Mean DMFT per child for migrant children was 1.07, and 1.16 for seasonal farmworkers children. The conclusion was that although migrant children had a lower caries experience than children of seasonal farmworkers, both seasonal (.05 FT) and migrant children (.28 FT) received inadequate dental treatment. Avery also examined 115 black adults aged 18-64 years and reported a mean DT of 6.76, a mean MT of 6.47, a mean FT of .77. Authors indicated the need for full and partial dentures was great, as well as the need for extractions, and periodontal therapy.<sup>26,27,83</sup>

Ragno et al. (1975) conducted a study to describe dental caries experience in 400 3-16 year-old migrant hispanic children in Connecticut. Ragno compared the caries experience of migrant children with children in a fluoridated community and found migrant children to be comparable to children in the fluoridated community. However, the treatment needs of migrant children were greater, with 63 percent of migrant children needing treatment, 12 percent with completed treatment and 24 percent were caries free. 23 percent of teeth experiencing caries was decayed and untreated in 6-9 year-olds and 30 percent was DT in children 10-12 year-old. 68 percent of 6-9 year olds were caries free, while 47 percent of 10-12 year olds were caries free. Examination procedures were reported to have been standardized according to standards for Connecticut School Dental Program.<sup>24</sup>

In 1977, Cisneros et al. examined a volunteer sample of 156 latinos aged 2-84 in Minnesota and compared mean DMFT per person with results from the 1962 National Health Examination Survey. Children aged 6-12 years-old mean DMFT per child was 5.32. When latinos were compared to U.S. black and white adults, mean DMFT was 13.65 compared to 14.50 and 21.20, respectively. Residents who lived in Minnesota for more than 5 years had a slightly lower dental care need than those who had live in Minnesota fewer than 4 years. "Recently settled" and "settled" Latinos utilization of services and oral hygiene levels and patterns were similar to the US population.68

Cipes et al., (1978) examined 513 hispanic migrant children aged 3-17 years in Connecticut to compare the caries experience of these children to, children living in a nearby fluoridated community and an earlier study of migrant children conducted by Ragno et al., (1975). Cipes found migrant children having lower caries free levels and greater percentage of caries than the fluoridated community and migrant children in the previous study conducted by Ragno. However, the percent FT was greater for migrant children (19 percent) compared to fluoridated community (10 percent), and (9 percent) in the previous study of migrant children. Children who had settled out or had not moved within a five period, were still classified as migrants, according to the Department of Public Instructions definition of who is a migrant. The migrant status of these children, as well as being connected to a stable school program, were possibly reasons for this difference in treatment need.

The author suggested also, the difference in the two studies was accounted for by the large number of "settled out" migrant children in Ragno's study compared to the more recent immigrants from Puerto Rico in Cipes study.23

DiAngelo et al., (1978) surveyed 578 Mexican American children ages 3-13 in Minnesota and reported that 75 percent of children ages 6-13 years old had 3-4 permanent teeth decayed and unfilled. By age 13, 73 percent of the occlusal surfaces of the 4 permanent first molars were either decayed or filled. Mean DMFT and DMFS per child aged 6-13 were 3.2 and 4.0, respectively. Three dentists were reported as being calibrated for the examination, but the methodology and criteria was not described.25

Woolfolk et al., (1982) conducted a study in Michigan to assess the oral health status of 203 hispanic children of migrant farmworkers. Mean DMFT per child was 2.2 and mean DMFS was 2.9. When compared with children aged 5-14 in the 1979-80 National Dental Caries prevalence Survey, 65 percent of teeth of migrant children had decayed surfaces compared to 17 percent of teeth with decayed surfaces for United States school children. The same study showed that less than 25 percent of migrant children (5-11 years) had caries-free permanent teeth, while over 58 percent of the United States school children (5-11 years) had caries free permanent teeth. One dentist examined all children, no mention of intraexaminer reliability.7

In 1982, a survey was conducted to compare the health status of migrants with local residents in Colorado. 14 percent of migrants were caries free compared to 31 percent caries free local residents. Over 43 percent of children of migrant farmworkers had a least one decayed tooth compared to 31 percent of local children. The average decayed tooth per migrant child was 2.1 compared to 1.78 per child for local children. Migrants oral health was worst than local residents, however, migrants perceived their health to be better than the local's self perception of health.52

Call et al., (1984) described the caries experience in permanent teeth of 534 Mexican American children of migrant farmworkers in Colorado. Mean DMFS per child was 3.56 for children aged 6-15 years old. Mean DMFS per child was 2.54 for children aged 6-10 and 5.81 for children aged 11-15 years. Caries was reported to be higher than the national and regional averages for school children. Regional average DMFS per child for SW region was 3.2 and the national average for DMFS was 4.8 in 1980. The study reported that 23 percent of migrant children in Colorado were found to be caries free, compared to 44.7 and 36 percent for the SW region and the nation, respectively. This study indicated a strong need for sealants and fluoride applications. Methodology similar to WHO and NDCPS (1979).22

DeBerry (1987) conducted a pilot study in three counties in North Carolina to describe the caries experience of migrant school children, to test procedures for this larger statewide survey and to compare the caries experience of migrant children with resident schoolchildren in North Carolina. The report found that the prevalence of dental disease for 5-9 year-olds was significantly greater for migrant children (mean DMFT=1.1) than for nonmigrant children (mean DMFT=.03). Mean DMFS score was 2.6 per child for 164 predominately hispanic migrant children aged 5-13, compared a mean DMFS score of 1.4 for nonmigrant schoolchildren.84

### C. Dental Knowledge and Health Behavior

Dental knowledge and health behavior of migrant farmworkers children and mothers were studied by Woolfolk et al., (1982) in Colorado. 68 percent of children felt that brushing was the best way to prevent cavities. The role of fluoride, relation between sweets and caries were weakly understood by both mother and child.10

In 1979, Slesinger et al., surveyed 262 female farmworkers in Wisconsin to describe the medical utilization patterns of hispanic farmworkers. Older female english speaking workers were reported to be most likely to have seen and taken their children to a dentist within the last year. Barriers to care were listed as; time, distance, language, and money. Slesinger noted a correlation between age of mother and the age of the child ( $r=.61$ ) when associating frequency of dental visits. Mothers's education or ability to speak english was not associated with whether a child received an annual dental or physical exam. The older or school age child was more likely to have had a dental examination and treatment if that child was enrolled in school.44,54

A comparative analysis was conducted of local residents in northern Colorado and migrant families attending the Sunrise Community Health Center by Ackerman et al., (1983). The study found that although migrant adults oral health status was as bad or worse than local residents, they perceived themselves as healthier than the local residents. This study concluded that dental education programs and greater outreach on dental care was needed.<sup>52</sup>

#### D. State and Local Dental Programs

Studies reported from Koos (1957) and Browning (1961) describing the plight and unmet treatment needs of the migrant farmworkers, facilitated Florida State Board of Health in 1963 to receive a grant from the United States Public Health Service to inaugurate a migrant project entitled "A Project to Develop a Basic Statewide Program of Health Services for Migrant Farmworkers and their Dependents in Florida". The project included 15 counties which provided initially, basic health care, but in 1965 basic was dropped from the title because treatment beyond the basic scope of care was rendered. The program was funded for five years.<sup>53</sup>

A unique collaborative effort between Colorado's Migrant Education and Colorado's Health Programs was discussed in a 1985 annual state report. The report showed that the Colorado Migrant Education Health Program, a comprehensive health program for students enrolled in migrant summer schools had over 200 physicians, dentists, pharmacists, and allied health providers (The dental program included 20 dental hygienists, 30 dental students or recent graduates) who incorporate health education into the migrant school curriculum and all health team members participating in classroom education and discussion groups. In spite of 13 years of comprehensive health and dental care to migrant children in Colorado, screening outcomes of the need of migrant children revealed that 62 percent of children needed dental care; 15.5 percent required referral for relief of pain; and 76 percent of fillings were occlusal surface fillings, indicating need for occlusal sealants.<sup>52</sup>

Dental students in Michigan, Minnesota, New Jersey, New York, California, Colorado, Connecticut, Iowa and Wisconsin sought to increase accessibility to dental care for migrant children and adults by utilizing mobile dental units to screen and treat patients in summer schools and migrant camps.<sup>8,23,24,42,45,46,50,69</sup>

In spite of outreach programs provided by federal, state and local dental programs, the prevalence of dental disease among migrant children still appears to be greater than children in the general population. The study by Woolfolk et al., (1984) measuring the behavior and dental knowledge of children of migrant farmworkers in Michigan found that dental knowledge was lacking and health education was greatly needed in order for a decision-making process to occur within this population.<sup>48</sup>

Slesinger (1979) conducted a study called the preventive medical care mortality and morbidity among children of migrant farmworkers in Wisconsin. The study showed that only 1/3 of migrant children under age 16 had received annual dental checkups, compared to 50 percent of children in the general population. Inference is made to the association of income and utilization of health care.

Since income was low among migrant farmworkers, it was expected that health care/dental care would only be sought when there was a need.44

#### E. Conclusions

All epidemiological studies to the residents knowledge, describing the oral health status of migrant schoolchildren in the U.S. are presented in this study. Only five of the 15 studies presented used methods and criteria similar to the national oral health surveys ( 1971,1979).7,22,29,68,84 Many of the others studies, except for a few cases, identified criteria for dental caries but failed to mention the methodology employed.

Most of the studies were conducted on children in schools, and a few studies were conducted on adults in camps or in a community health clinic. Only one of the studies reviewed selected a random sample from the population to examine (most likely because of the difficulty in knowing in advance the true or approximate number of migrants to expect at any given time). The samples selected were either convenience samples or census samples of small defined groups of the population, which prevented the studies from being truly representative and generalizable to the migrant population.

The overall consensus from each study was that when oral health conditions of migrants were compared to the general population, the prevalence of oral disease was greater among migrants than the general population. More significant was the low level of treatment received by migrants. All authors except one, Cipes et al., described the level of treatment for migrants as being significantly less than that received for the general population.

The high degree of mobility, low socioeconomic status, language difficulty, culture, and transportation are only a few of the barriers mentioned which impedes access to medical and dental care, accounting for the greater prevalence of dental disease and the low level of dental knowledge and utilization of care among this group of people.

### III. PURPOSE AND OBJECTIVES OF SURVEY

#### A. Purpose of Study

The purpose of the study is to describe the oral health status of children of migrant farmworkers who migrate to North Carolina during the growing season. This information will provide us with baseline data of the prevalence of dental disease and estimates of treatment needs among these children. These data will assist the Dental Health Section of North Carolina's Department of Human Resources in monitoring disease conditions in the state population and design programs which will improve the oral health and prevent future dental problems among migrant children.

Identifying the oral health care need of migrant school children will supplement statewide information of oral health conditions and needs of North Carolina schoolchildren. In addition, this study will be compared to data collected in the North Carolina School Oral Health Survey, 1986-87 and with other similar studies conducted of children in states with migrant summer school programs.



## B. OBJECTIVES

The objectives of the study are to:

1. Describe the oral health status and treatment needs of migrant children aged 5-13 years in K-8 grades, attending summer school in North Carolina by determining the;
  - A. the mean number of decayed, missing and filled teeth and surfaces for primary and permanent teeth per child;
  - B. the mean number of permanent teeth sealed with dental sealants;
  - C. the need for sealants, restorations, extractions, and replacements for missing teeth.
  - D. periodontal treatment needs.
2. Describe the level of dental health knowledge and dental behavior patterns of migrant children and parents of migrant children.
3. Determine whether there is an observable difference in the prevalence of dental disease between interstate, intrastate and formerly migrant children.
4. Determine if the prevalence of dental disease in migrant children in North Carolina is greater, worst, or the same as migrant children in other studies.

## IV. RESEARCH DESIGN AND METHODOLOGY

### A. Introduction

This study will attempt to meet the objectives stated above by designing an epidemiological survey with a representative sample of randomly selected migrant children enrolled in summer schools throughout North Carolina. A sample from the population of migrant schoolchildren was selected because of the relatively easy accessibility to these children in the school setting.

### B. Sample Description

The migrant summer school enrollment for summer 1987 is expected to be approximately 1824 students, with an ethnic composition of 40 percent hispanic, 30 percent black, 20 percent white and 10 percent American Indian, Asian and other. Students in grades K-3 will comprise 57 percent of the children enrolled; grades 4-5, 22 percent; grades 6-8, 19 percent, and finally grades 9-12 being only 2 percent of the students enrolled.

Migrant children are classified by the Department of Education as, Interstate Migrant, Intrastate Migrant, and Formerly Migratory (Five Year Migrant) in Agriculture or Fishing (Appendix M). It is expected that with the enrollment of 1824 migrant students, 43 percent will be interstate migrants whose parents were in agriculture, 10 percent intrastate migrants in agriculture, and 45 percent of

the children are expected to be "formerly migratory".<sup>1</sup>

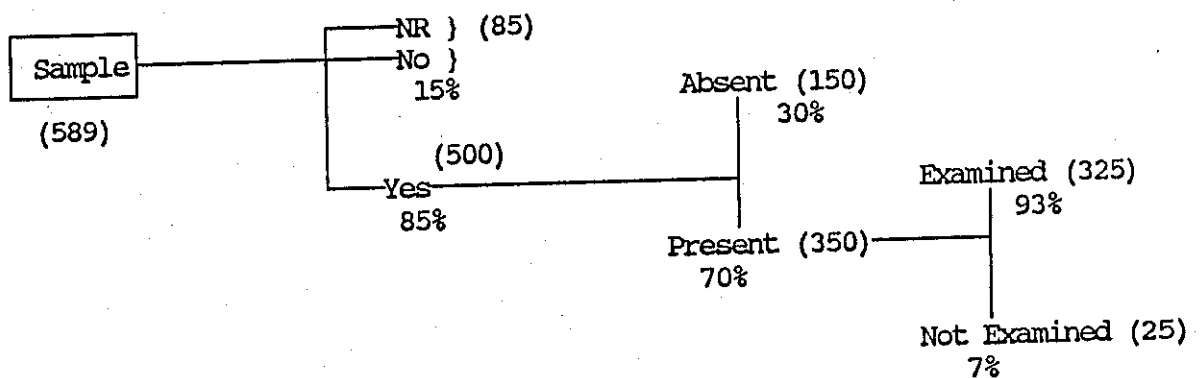
A pilot study was conducted in the summer of 1987 to test procedures for this statewide study and to determine the level of precision necessary for accurate and acceptable analysis in establishing the true population mean for comparisons of these data with other state and national data and for planning oral care services.

172 migrant children aged 3-15 years were examined in the pilot study. Children younger than age 5 and older than age 13 represented a very small proportion of children attending summer school (<5 percent). Data for 161 children were analyzed, excluding these children. The mean DMFT per child was 1.29 with a standard deviation of 2.03. Based on these estimates the standard error of the mean was calculated with a result of .16 (  $1.29 \pm 1(.16)$  ), assuring us at the 68 percent confidence level, that the true DMFT rate for the population of 5-13 year-old migrant children will fall within the range bounded by the sample mean  $\pm$  1 standard error, or within  $1.29 \pm .16$ . The confidence interval for the population mean will not be less than 1.13 nor greater than 1.45.

To ensure accuracy and to increase the precision level, a representative sample size of 325, 5-13 year-old migrant children is needed to have 50 percent confidence that the population mean will fall within  $1.29 \pm .07$  DMFT. The standard error of the mean is calculated at .11 for a sample size of 325. To account for extraneous factors, such as, high turnover (mobility), absenteeism, parent refusal to give consent for child's examination, or children younger than age 5 and older than age 13 enrolled in the summer school program entering into the data set, a sample size of 589 will be selected. The sample size of 589 will represent 33 percent of the universe of 1824 schoolchildren.

It is anticipated that 85 percent of the parents will consent to have their children examined and 15 percent will not consent or students will not respond for various reasons. Of the 85 percent with parental consent, 70 percent of the students will be present the day of the examination. Of the 70 percent present, 93 percent will be examined. A diagram of the anticipated response rate is presented below.

Fig 1



From the pilot study it was learned that classrooms were not classified by single grades. Children of differing ages are grouped together in classes because of the relatively small size of the programs. It was very difficult determining the number of classrooms and students per classroom in advance of the study. Therefore the school programs were selected as the sampling units. Schools varied in the number of enrolled students from 1-150 children.

Parental consent forms will be sent to parents of selected children. Migrant parents usually sign a blanket consent form for medical care when they sign forms to enroll their children in the summer school program. Consent forms and questionnaires were translated into Spanish for parents unable to speak or read English. Forms will be taken to parents by the migrant recruiter when the recruiter visits migrant camps to enroll children into the summer school program. If the migrant recruiters do not read or assist some parents in filling out the questionnaire, a low response rate of approximately 40 percent on the questionnaires is anticipated along with a high percentage of inaccurate or missing information. Also, if the migrant recruiter fails to put emphasis on the return of the questionnaire, a low response rate is expected. To remedy this low response rate, migrant children of parents who have not returned the questionnaire will be given another to take home and asked to return by the end of the week.

C. Sample Design

The research design is an epidemiological descriptive survey which will involve randomly selecting migrant summer school programs. The statewide summer school program is expected to enroll approximately 1824 children in K-8 grade in 52 schools with 143 classrooms from 35 counties. The number of expected student enrollment for each of the 52 schools varies from 1-150 students.

Because of the variability in the size of school programs, the selection of the sample will be based on school programs. A stratified cluster design will be created in which the 52 school programs will be categorized into four size strata for programs with 1-24 students, 25-49 students, 50-74 students, and 75+ migrant program participants. 52 clusters were administratively defined as Migrant Summer School Programs in 35 counties in the state.

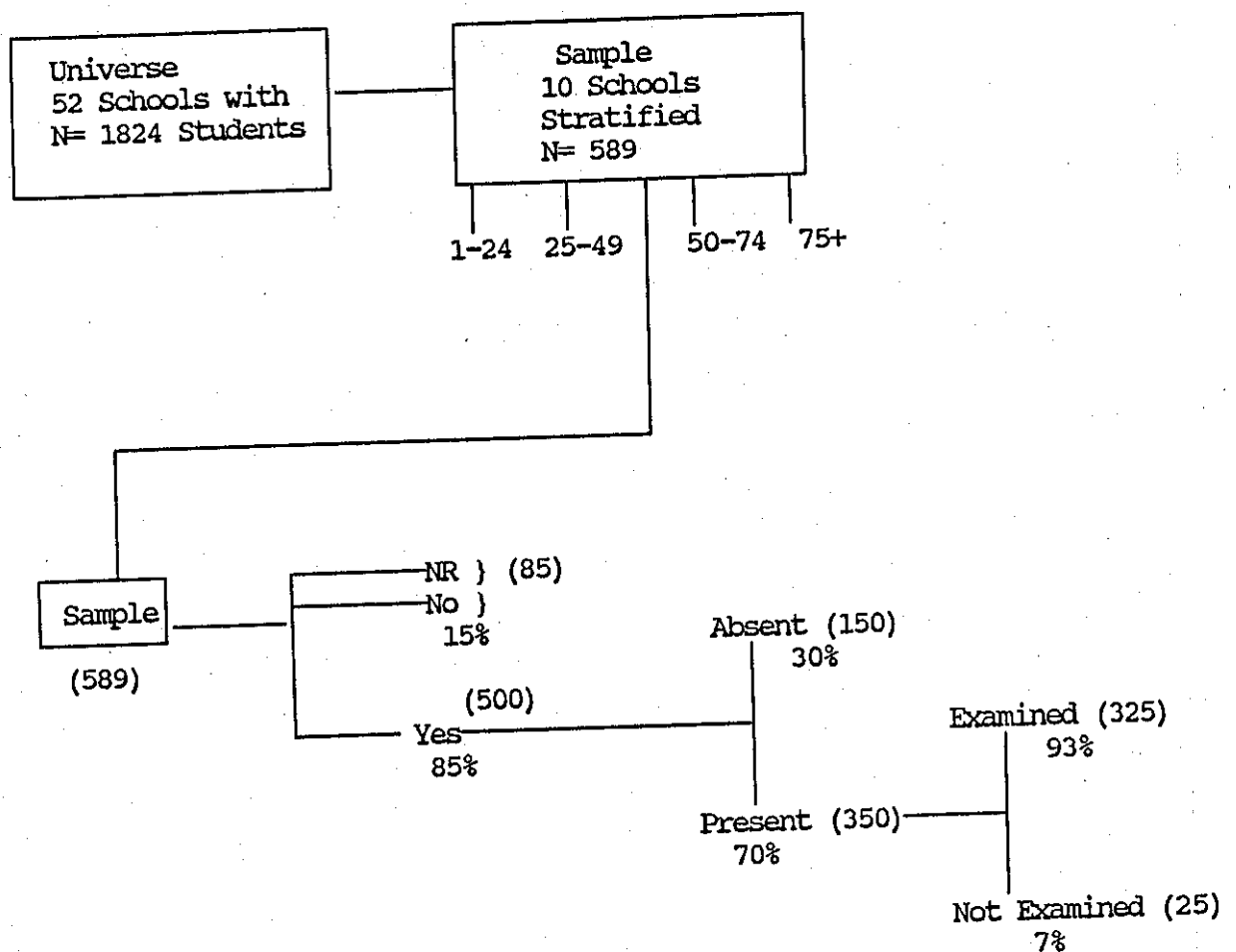
Category of Sizes Strat	No. of School Programs per Strata in Universe	No. of Students per Strata in Univ.	No. of Students per Strata in Sample
( N=4 )	( N=52 )	( N=1824 )	( N=589 )
1-24	29	396	23
25-49	10	293	64
50-74	7	355	117
75+	6	780	385

A random selection of 10 school programs (clusters) was drawn from the 4 strata by size. Of the 10 school programs selected, 4 schools were selected from the 1-24 size stratum, 2 selected from the 25-49 stratum, 2 from the 50-74 stratum, and 2 selected from the 75+ size stratum, resulting in a sample size of 589 students.

Extraneous factors such as parents deciding to move because of crop conditions, child staying home to baby-sit younger sibling(s), child not consenting to the examination because he/she does not want to be classified as a migrant, or child required to work in the fields will reduce the sample size and level of precision. The size of the sample (589) was selected to allow for extraneous variables which might affect the availability of the student the day of the examination.

Below is a diagram of the sampling design and expected participation and response rate.

Fig 2 Sample Design and Anticipated Response Diagram



#### D. Procedure Delineation

To ensure success of the migrant study, support for the project is essential from the Assistant State Superintendent of Public Instructions, Support Program, migrant project directors, migrant school recruiters, local health directors, regional dental supervisors, and local dental staff. A letter explaining the survey project, the anticipated timetable for initiating and completing the project, and request for their support will be sent in early January. After receiving the superintendents supports, letters will be sent to local migrant project directors requesting the approximate number of schools, students, classrooms, and teachers, participating in their county 1988 summer school program for migrant children. After identifying the number of counties, schools, children, classrooms, and teachers participating in the statewide summer program for migrant children, a random selection of counties and schools totalling 589 children aged 5-13 children will be made.

Local migrant project directors, migrant school recruiter, local health director, and principals of selected counties and schools will be notified of their selection to participate in the survey. All other local project directors will also be notified of the counties selected and thanked for their support and participation. Letters will be sent to the Dental Section's regional dental supervisors informing them of the counties and schools selected and requesting assistants from the local dental hygienists and dentists to serve as local coordinators and/or recorders, and as dental examiners respectively, for the region or county they work.

Local dental hygienists will be trained and/or reviewed prior to the survey. The majority of the hygienists received training and participated in the Statewide School Survey 1986-87. For those with training, a review of the procedures will be necessary. For first time coordinators/recorders, a training workshop will be held. The training and review for the coordinators and recorders will be held together.

Local dentists serving as examiners were all calibrated during the Statewide School Survey 1986-87 by Dr. Gary Rozier and Dr. Gene Sterritt. The principal examiner (BJD) was calibrated by Dr. Rozier prior to the migrant pilot study during the summer of 1987. It will be necessary for all examiners to recalibrate because of the time lapse between prior training and the beginning of the survey. The principal examiner will be working all sites with each individual examiner. Therefore, it will be necessary to calibrate each examiner with the principal examiner. This will entail duplicating 10 percent of the examinations for interexaminer reliability. The calibration will take place during the beginning of the examination for all examiners except one (RM), who will be calibrated at his dental clinic prior to the survey.

Before the examination begins it is important to have consent forms returned from parents to the local coordinator. Migrant school recruiters will be asked to deliver the parent consent forms, information brochure, and parent questionnaire in spanish and english to parents of children enrolled in the summer school

program. One responsibility of the migrant school recruiter is to visit the camps where migrant families live and encourage parents to enroll their children in the summer school program. The school recruiter will be asked to return the consent forms and questionnaires to the local coordinator. During the first week of school local coordinators will follow-up on children enrolled without a returned consent form. These children will be given a consent form to take home to their parents and asked to return the forms by the end of the week. Since children are enrolled everyday of the week, the coordinator will visit the classrooms the last week prior to the examination and send consent forms home to those children who haven't received or returned a form. Children not returning consent forms will not be examined nor will children with negative response from parents receive an examination.

After the principal investigator (BJD) and the migrant school recruiter/migrant project director decide logistically which dates are best for the examination at their site, the local coordinator will be notified. She will then meet with the school principal and school recruiter to identify a classroom (space) for the examination. Because the summer months are so hot, an air conditioned room or one with fans will be requested.

#### IV. DATA COLLECTION METHODS

##### A. Data Collection Instruments and Conceptual Definition.

Data to be collected will include:

1. Parental consent along with 3 questions included regarding child's health history (history of heart disease, rheumatic fever, or diabetes) written in spanish and english measuring parental response.
2. Sociodemographic and dental health knowledge and behavior information describing parents race, sex, age, income status, education attainment, and dental health knowledge and dental attitude on parent questionnaire written spanish and english. The questionnaire was modeled after the questionnaire developed by Woolfolk et al.<sup>10</sup> The questionnaire was field tested in Tri-County Migrant Health Clinic in Newton Grove, NC., and further modified for comprehension in Spanish.
3. Demographic and dental health knowledge and behavior information describing students race, sex, age, education level, and dental health knowledge and dental attitude on student questionnaire written in spanish and english. The questionnaire was modeled after the questionnaire developed by Woolfolk et al.<sup>10</sup> The questionnaire was field tested in Tri-County Migrant Health Clinic in Newton Grove, NC., and further modified for comprehension in Spanish.
4. Migratory status of children will be collected from school records and any missing sociodemographic information not collected from student questionnaire.
5. a clinical examination describing the caries experience and treatment needs; periodontal treatment needs; and the presence of sealants.

Caries experience will be measured using the; DMFT and DMFS indices for permanent teeth and surfaces, and dft and dfs indices for primary teeth and surfaces. Diagnostic Criteria for Caries are, with little modifications, those adopted by the Caries Measurement Task Group, Conference on Clinical Testing of Cariostatic Agents, sponsored by the American Dental Association in 1968. The modifications are consistent with those made by the Epidemiology and Oral Disease Prevention Program at the National Institute of Dental Research. These criteria were followed by North Carolina Department of Human Resources, Division of Health Services, Dental Health Section, and the Dental Public Health Program, Department of Policy and Administration, University of North Carolina, Chapel Hill in previous surveys. A summary of the diagnostic criteria for dental caries experience utilizing the decayed, missing, and filled indices for permanent and primary teeth can be found in appendix D.16

Sealant Presence will be detected by visual and tactile examination of the tooth's pit and fissure surfaces. Sealants are easily visually identified if the material used is tinted or opaque. However, if the material is clear, it will be more difficult to detect visually. An explorer can be used then to verify sealant presence, absence, or partial loss. Adhesive sealants will exhibit a tactile sensation different from the feel of an explorer passing over a sound tooth surface. Sealant presence will be scored only for permanent teeth present and functional. Criteria for sealant presence and codes are found in Appendix E.16

Dental Restorative, Sealants, and Exodontia Treatment Needs gives an indication of the type and amount of treatment needed to restore each child to optimal dental health. Such information is essential for planning treatment programs of preventive and restorative care for population groups as migrant children.

The methodology employed is based on criteria used by North Carolina Department of Human Resources, Division of Health Services, Dental Health Section, and the Dental Public Health Program, Department of Policy and Administration, University of North Carolina, Chapel Hill in the 1986-87 Statewide Oral Health School Survey. A summary of the codes for treatment needs is presented in Appendix F.16

Community Periodontal Index of Treatment Needs (CPITN) is an index developed by the World Health Organization for use in epidemiological surveys for a quick and reliable determination of required periodontal care in a population.<sup>86</sup> This index gives an indication of the extent and complexity of treatment needs for periodontal conditions present. The treatment needs identified through this method are need for: 1) oral hygiene instruction; 2) scaling and root planing in addition to oral hygiene instruction which includes elimination of plaque retentive margins of fillings and crowns; and 3) complex treatment in addition to scaling and root planing and oral hygiene instruction. Codes recorded for the CPITN index can be found in Appendix G.

B. Operational Definition

1. Parental consent form asking parent permission to include their child in the study will be given to the parent by the migrant school recruiter. The migrant school recruiter will be asked to take the parental consent form, information brochure, and parent questionnaires with her/him when she/he visits migrant camps recruiting children for school. The students parents will be asked to sign forms and answer questions related to the student's health history (Parents are asked to sign forms to enroll their children in school through the migrant recruiter, therefore, it would be convenient for our forms to be presented during that time).
2. A questionnaire will also be given to parents, asking parent/guardian to answer questions related to age, race, education, home base, household income, parent/guardian dental knowledge, and dental health behavior. Migrant recruiters will return forms to the local coordinators. All children not reached during the recruiters visit to the camps will be given consent forms by the local coordinator during the first week of school. Children will be asked to return the forms to their teachers by the end of the week.
3. Student questionnaires will be given by the local coordinator to students 8 years and older and students will be asked to answer questions related to age, race, home base, dental knowledge, and dental health behavior in the classroom. The local coordinator will explain the study to the children prior to passing out the questionnaire. The coordinator will work close with the school recruiter, principal, and teachers to ensure a high response rate.
4. School records will be used to obtain sociodemographic information and migratory status of children not available from the questionnaire administered prior to the examination.
5. Clinical examination optical scan forms will be used to record sociodemographic information, and clinical variables (DMFT, DMFS, def, CPITN, treatment needs, and presence of sealants). The clinical examination form and procedures are modeled after the North Carolina Oral Health Survey Manual, developed by the Dental Health Section, NCDHR/DHS.16 The clinical examination will consist of two teams, one examiner and one recorder per team per site. The examiners will be state public health dentists, and recorders will be state public health hygienists.

Local coordinators and recorders will be trained/reviewed on the procedures for coordinating and recording data on the clinical examination forms four weeks prior to the first examination. The clinical examination of each child (based on a pilot study conducted summer, 1987) should take 5-8 minutes for children aged 5-10, and 10-12 minutes for children aged 10-13 years-old.



Dental examinations will be conducted on students who have written consent from parent and a negative health history. During the examination, the dental examiner will use criteria standard for the indices (Appendix D) and make calls to the recorder, who will then record the dental examiner's observations of the student's teeth and gums ( grades K-8 ). A referral form will be given to students after the examination to take home to their parents. The referral form will indicate whether the child needs to visit a dentist soon, practice better oral hygiene or no treatment is needed. Two examiners will be used in schools with enrollment of 40 or more students.

Portable dental equipment will be supplied by the Section and will be inventoried, loaded, unloaded, and setup by the principal examiner and local coordinator (if available). Enough supplies and instruments will be taken to cover a week on the road, or longer if necessary. A day and a half will be allocated for each school with 40 or more students. The timetable allowed for the completion of the survey will be four weeks. Dental survey will begin June 28, 1988 and end July 22, 1988.

## V. DATA ANALYSIS AND REPORTING PLANS

### A. Data Management

Data accuracy and completeness of clinical examination forms will be checked at the end of each examination and again at the end of the day by the recorder and principal examiner. The completed optical scan forms will then be scanned at UNC Computation Center by Mr. John Blanton, Programmer by use of a Cognitronics 801 Optical Scanner. Data will be transferred on to a standard computer tape and given to Mr. Mike Bowling, State Statistician at the Center for Health Statistics. The computer tape will be stored at the State Information Processing Service (SIPS) in Raleigh. A raw data set of variables will be created, followed by summary variables which will be edited and analyzed.

### B. Data Analysis

Data analysis will be performed using the SAS software package. Descriptive statistics including: PROC FREQUENCY; PROC MEANS, AND PROC UNIVARIATE will be performed. For caries status; Mean DMFT, DT, FT, MT, dft,dt, ft will be presented as well as percentage of children with active caries, and distribution of caries according to age and sex. Tables showing Mean sextant and worst score for CPITN, percentage of children with healthy periodontal tissues, percentage of children with bleeding only; bleeding and calculus, and shallow pockets will also be described in tables. Percentage of children with sealants and percentage of children needing treatment, by age, sex and treatment need will be presented in tables.

Mean number of teeth needing treatment, level of treatment needed and distribution of children needing sealants, and restorations will be presented. Multivariate analysis will be performed to determine the relationship between migrant sociodemographic and economic status, dental knowledge, behavior and prevalence of dental disease. Chi-Square, ANOVA, and T-Test will be performed as appropriate to determine level of significance differences when comparing migrant children with NC children and migrant children in other states.

## BIBLIOGRAPHY

1. Health Resources and Service Administration: Primary Care: Migrant Health Program, Bureau of Health Care Delivery and Assistance 1987.
2. Koos, E. L., They Follow the Sun. Jacksonville, Florida State Board of Health Monographs No. 2, 1957.
3. Shenkin, B. N. Health Care for Migrant Workers: Polices and Politics Ballinger Pub. Co. 1974.
4. Guendelman, S., Children's health needs in seasonal immigration. Journ. of Pub. Health Policy 493-509, 1985.
5. Johnston, H. L., Health for the Nation's Harvesters. National Migrant Worker Council, Inc., Michigan, 1985.
6. Schneider, D. A., Dental Services for Special Populations. J. Public Health Dent. 45:4 229-231 1985.
7. Woolfolk, M., Hamafrd, M., Bagramian, R. A., Cohen, H., Oral Health of Children of Migrant Farm Workers in Northwest Michigan. J. Public Health Dent. 22:3 101-105 1984.
8. Oster, C., Dental Help for the Migrants, NY State Dent. Jour. 47:9 538, 541 1981.
9. Hughes, J. T., Rozier, R.G., Ramsey, D.L.: Natural History of Dental Diseases in North Carolina 1976-77. Carolina Academic Press, N. C. 1982.
10. Woolfolk, et al, Self- Reported Health Behavior and Dental Knowledge of a Migrant Worker Population. Comm. Dent. Oral Epid., 13:3 140-142 1985.
11. The National Dental Caries Prevalence Survey, The Prevalence of Dental Caries in U. S. Children. U.S. Dept. of HHS, PHS, NIH, 1971-74
12. The National Dental Caries Prevalence Survey, Dental Treatment Needs of U.S. Children. U.S. Dept. of HHS, PHS, NIH, 1979-1980.
13. Fiscal 1988 Federal Appropriations Public Health Funding: Some Ups, Some Downs, The Nation's Health, February 1988, p. 1,20.
14. Bohannan, H. M., Graves, R. C., Disney, J. A., Stamm, J.W., Abernathy, J. B. Bader, J. D., Effect of Secular Decline in Caries on the Evaluation of Preventive Dentistry Demonstrations. Jour. of Public Health Dent. ; 45; 83-89, 1985.
15. Bader, J. D., et al., Identifying Children who will experience high caries increments. Community Dentistry and Oral Epi. ; 14:198-201, 1986.
16. DHS Div. of Health Services, NCDHR, Dept. Health Policy and Admin. UNC- CH, Procedures and Training Manual for North Carolina Oral Health Survey 1986-1987.

17. Ludwig, I. G., Bidddy, B. G., Geographic variations in the prevalence of dental caries in the U.S. of America. Caries Research, 3:32-43, 1969.
18. Graves, R. C., Dental Health Needs and Demands in American Society: Current Trends. Health Values, Vol. 8, No. 1, Jan./Feb., 1984.
19. Dunning, J. M., Principles of Dental Public Health, 3rd. Edition, Harvard University Press, Cambridge, Massachusetts, 1979.
20. Cohen, L. K., Bryant, P.S., Social Science and Dentistry, Vol II, Federation Dentaire Internationale, Quintessence Publishing Co. Ltd., 1984.
21. Douglass, C. W., Weintraub, J. A., Gillings, D. B., et al: National trends in dental caries and Periodontal disease. Journal of Dental Research Vol. 60 p. 427A, 1981.
22. Call, R. L., Entwistle, B. Swanson, T., Dental Caries in Permanent Teeth in Children of Migrant Farm Workers, Am. J. Public Health, Vol. 77, No. 8, Aug. 1987, pp. 1002-3.
23. Cipes, M. H., Castaldi, C. R., Dental Health of Children of Migrant Farmworkers in Hartford, Connecticut, J. Conn. State Dent. Assoc., Vol. 56, No. 2, May, 1982, pp. 59-62.
24. Ragno, J., Castaldi, C. R., Dental Health in a Group of Migrant Children in Connecticut, J. Conn. State Dent. Assoc., Vol. 56, No. 1, pp. 15-21, contd.
25. Di Angelis, A. J., Kaiz, R. V., Jensen, M. E., Pintado, M., Johnson, B., Dental Needs in Children of Mexican American Migrant Workers, J. Sch. Health, Vol. 51, No. 6, Aug. 1981, pp.395-9.
26. Avery, K. T., The Oral Health Status of Migrant and Seasonal Farmworkers and their Families in Florida, Community Dent. Oral Epidemiol., Vol. 4, 1976, pp. 19-21.
27. Avery, K. T., The Dental Health of Children of Migrant and Seasonal Agricultural Workers, J. Sch. Health, Vol. 45, No. 1, Jan. 1975, pp. 24-6.
28. Larson, L. B., et al, Nutritional Status of Children of Mexican-American Migrant families, J. Am. Diet. Assoc., Vol. 64, No. 1, Jan. 1974, pp.29-35.
29. Gluck, G. M., et. al., Dental Health of Puerto Rican Migrant Workers, Health Serv. Rep., Vol. 87, No. 5, May 1972, pp. 456-60.
30. Bachand, R. G., Gangarosa, L. P., Bragassa, C., A Study of Dental Needs, DMF, Def, and Tooth Eruption in Migrant Negro Children, J. Dent. Child, Vol. 28, No. 6, Nov.-Dec. 1971, pp. 399-403.
31. Methodology for Designating High Impact Migrant and Seasonal Agricultural Areas, HCR, U. S. Dept. of HHS, June 28, 1985.
32. 1986 State Migrant Evaluation, Division of Support Programs/Support Services Area, N. C. D.P.I., 1986.
33. Wilk, V. A., The Occupational Health of Migrant and Seasonal Farmworkers in the United States, 2nd. Ed., Farmworker Justice Fund, Inc.,

Washington, 1986.

34. Brunelle, J. A., Carlos, J. P., Changes in the Prevalence of Dental Caries in U. S. Schoolchildren, 1961-1980, J. Dent. Res., Vol. 61, Nov. 1982, pp. 1346-1351.
35. Graves, R. C., Stamm, J. W., Oral Health Status in the United States: Prevalence of Dental Caries, J. Dent. Educ., Vol. 49, No. 6, 1985, pp. 341-351.
36. Bales, D. J., In Response, Oral Health Status in the United States: The Prevalence of Dental Caries, J. Dent. Educ., Vol. 49, No. 6, 1985, p. 352-3.
37. Browning, R. H., Northcutt, T. J. Jr., On the Season: a Report of a Public Health Project Conducted Among Negro Migrant Agricultural Workers in Palm Beach County, Florida, Childrens Bureau (DHEW) Washington, D. C., 1961.
38. Chapman, A. L. et al, Migrant Health Project, Pennsylvania, 1966 Annual Progress Report on Health and Medical Services for Migrants, U. S. P. H. S., 1966.
39. Avery, K. T., The Dental Health of Migrant Agricultural Workers, J. Occup. Med., Vol. 16, No. 9, Sep. 1974, pp. 606-7.
40. Gangarosa, L. P., Oral Health Care for Migrant Agricultural Workers in Monroe County, New York, N. Y. State D. J., Vol. 34, Oct. 1968, pp. 481-4.
41. Bleiweis, P. R., et al, Health Care Characteristics of Migrant Agricultural Workers in Three North Florida Counties, J. Comm. Health, Vol. 3, No. 1, Fall 1977, pp. 32-42.
42. Sierk, D., Iowa Students Care for Migrant Farmworkers, Dent. Students' Mag., Vol. 50, Oct. 1971, pp. 60-1.
43. Sharma, P. S., 'Because it Needs to Be Done,' JADA, Vol. 84, March 1972, pp. 506-11.
44. Slesinger, D. P., Cautley, E., Medical Utilization Patterns of Hispanic Migrant Farmworkers in Wisconsin, Pub. Health Rep., Vol. 96, No. 3, May-June 1981, pp. 255-262.
45. Haas, C. D., Migrant Summer Dental Health Project, Dent. Students' Mag., Nov. 1965, pp. 128-9, 164.
46. Lind, K., 'Abre La Boca,' JADA, Vol. 79, Nov. 1969, pp. 1083-4.
47. Kurtzman, C., Freed, J. R., Goldstein, C. M., Evaluation of Treatment Provided Through Two Universities' Mobile Dental Project, J. Pub. Health Dent., Vol. 34, No. 2, Spring 1974, pp. 74-79.
48. Bullen, M. E., Johnston, D. W., Dental Caries Experience of Migrant Farm Workers' Children, Elgin County, (Abstract) J. Dent. Res., Vol. 67, Mar. 9-13, 1988.
49. Abernathy, J. R., et al, Development and Application of a Prediction Model for Dental Caries, Comm. Dent. Oral Epidemiol., Vol. 15, 1987, pp. 24-8.

50. Barnett, S. E., Call, R. L., A Student Community Dental Experience with Migrant Farmworker Families and the Rural Poor, AJPH, Vol. 69, No. 11, Nov. 1979, pp. 1107-1113.
51. Oregon Migrant Health Project (Annual Report), Dental Health Survey, Summer 1970.
52. Ackerman, A. Simkovic, J., Special Migrant Initiative. 1982 Survey to Compare the Health Status of Migrants with Local Residents. Final Report. Colorado State Dept. of Education, Denver. Compensatory Education Services Unit.; Colorado State Dept. of Health, Denver. 1985.
53. Florida State Migrant Health Project, (Annual Report), Farm Labor Dept. 1968.
54. Slesinger, D. P., et al, Preventive Medical Care, Morbidity, and Mortality Among Children of Migrant Farm Workers, CDE Working Paper 84-37, Wisconsin Univ., Madison, 1986.
55. Abernathy, J. R., et al, Application of Life Table Methodology in Determining Dental Caries Rates, Comm. Dent. Oral Epidemiol. Vol. 14, 1986, pp. 261-4.
56. Lehner, T., Future Possibilities for the Prevention of Caries and Periodontal Disease, Brit Dent. J. Vol. 149, p. 318.
57. Silversin, J. B., Behavioural Change for the Prevention of Oral Diseases in Children: a Symposium, Int. Dent. J., Vol. 30, No. 3, 1980, pp. 234-5.
58. Page, J., Behavioural Change for the Prevention of Oral Disease in Children: One-On-One Programme, Int. Dent. J., Vol. 30, No. 3, 1980, pp. 236-8.
59. Coombs, J. A., Application of Behavioural Science Research to the Dental Office Setting, Int. Dent. J. Vol. 30, No. 3, 1980, pp. 240-6.
60. Woolley, J. M., Changing Oral Hygiene Attitudes and Habits, Int. Dent. J., Vol. 30, No. 3, 1980, pp. 249-254.
61. Frazier, J. P., School-Based Instruction for Improving Oral Health: Closing the Knowledge Gap, Int. Dent. J., Vol. 30, No. 3, 1980, pp. 257-265.
62. Jenny, J., Basic Social Values, Structural Elements in Oral Health Systems and Oral Health Status, Int. Dent. J., Vol. 30, No. 3, 1980, pp. 276-282.
63. Chapman, A. L., Langworth, R. M., Dental Services for Migrants in Pennsylvania, Pennsylvania Dental Journal, Vol. 36, No. 7, Oct., 1969, pp. 241-243, 265.
64. Abrams, W. Z., Budgeting Dental Care for Indigent Children, The Journal of the New Jersey State Dental Society, April 1967, pp. 307-311, 328.

65. Downs, R. A., Bonnet, L. J., Colorado Dental Migrant Project, Journal of the Colorado Dental Association, March 1965, pp. 17-19.
66. Arra, M. C., A Report of the Dental Program for Migrants, Endeavor, Wisconsin, The Journal of the Wisconsin State Dental Society, Vol. 42, No. 3, March 1966, pp. 61-64.
67. Abrams, W. Z., Dentistry in a Migrant Farm Labor Program, The Journal of the New Jersey State Dental Society, Nov. 1965, pp. 121-124.
68. Cisneros, H. C., Di Angelis, A. J., Katz, R. V., Oral Health Findings in a Minnesota Latino Population, Northwest Dentistry, Vol. 38., Jan.-Feb. 1979, pp. 7-11.
69. Bagramian, R. A., Maggiore, E. D., An Effective Migrant Oral Health Program Using Dental Students as Providers, J. Mich. Dent. Assoc., Vol. 62, No. 5, 1980, pp. 301-4.
70. American Friends Service Committee: Child Labor in Agriculture, Report done in cooperation with the National Committee on the Education of Migrant Children, Summer, 1970.
71. DiPerna, P., The Lethal Cloud of Indifference, The Nation, June 27, 1981, pp.786-789.
72. Fuentes, J. A., The Need for Effective and Comprehensive Planning for Migrant Workers, Am. J. Pub. Health, Vol. 64, No. 1, 1974, pp. 2-4.
73. U. S. Department of Health and Human Services: 1978 Migrant Health Program target Population Estimates, Rockville, MD.: Health Services Administration, Bureau of Community Health Services, April 1980.
74. Migrant Farmworkers in North Carolina, Report prepared by Migrant Ministry Committee, N. C. Council of Churches, Raleigh, N. C., 1982.
75. U. S. Senate Committee on Labor and Public Welfare, Interim Report on the Status of Program Activities under the Migrant Health Act (Public Law 87-692) Comm. Print 88th Congress, 2d Session June 30, 1964.
76. Section 329 (247d)(a) of the Public Health Service Act, 1983.
77. U. S. Department of Agriculture: Hired Farmworkers: Background and Trends for the Eighties. Rural Development Research Report Number 32. Washington, D. C. : Economic Research Service, 1981.
78. Ismail, A. I., B. S. Burt and J. A. Brunelle, Prevalence of Total Tooth Lo Dental Caries, and Periodontal Disease in Mexican-American Adults: Results from the Southwestern H Hanes, J. Dent. Res. 66(6): 1183-1188, June, 1987.
79. The National Dental Caries Prevalence Survey, Caries Prevalence in U. S. School Children 1986-87, U. S. Dept. of HHS, PHS, NIH, 1971-74.
80. Burt, B. A., The Future of the Caries Decline, J. Pub. Health Dent. Vol. 45, No. 4, Fall 1985, pp. 261-269.

81. Ismail, A. I., B. A. Burt, G. E. Hendershot, S. Jack and S. B. Corbin, Findings From the Dental Care Supplement of the National Health Interview Survey, 1983 JADA, Vol. 114, May 1987, pp. 617-21.
82. Ismail A. I., B. A. Burt and J. A. Brunell, Prevalence of Dental Caries and Periodontal Disease in Mexican American Children Aged 5-17 years: Results from Southwestern H Hanes, 1982-83.
83. Avery, K. T., Dental Health of Migrant Agricultural Workers, J. Occup. Med., Vol. 16, No. 9, Sept. 1974, pp. 606-7.
84. DeBerry-Sumner, B.J., Caries Experience in Migrant Children in Tri-County, North Carolina, Pilot Study, Summer, 1987.
85. Peterson, P.Q., "Migrant Health-Future Outlook," Public Health Service, Washington, D.C. Speech presented before the Western States Migrant Health Conference, Los Angeles, CA., June 26, 1967.
86. Ainamo, J., et al., "Development of the WHO Community Periodontal Index of Treatment Needs (CPITN)," Int. Dent. J. 32, 281-291 (1982).

PARENTAL CONSENT FORM





North Carolina Department of Human Resources  
 Division of Health Services  
 P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor  
 David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.  
 State Health Director

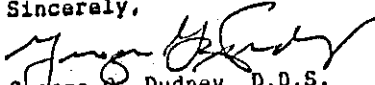
Dear Parent or Guardian:

The Dental Health Section in cooperation with your child's school, the local health department, the North Carolina Department of Public Instruction, Division of Support Programs; and the Bureau of Health Care Delivery and Assistance, Migrant Health Program in Washington, D.C. is conducting a survey of migrant school children across the state to determine how much tooth decay and gum disease exists among our children. The results will be used in planning both health and educational programs for migrant children.

This is an examination only. It will be necessary for the school to furnish additional information from your child's records. **THE RESULTS OF THIS EXAM WILL BE STRICTLY CONFIDENTIAL.** The survey will be supervised by a licensed dentist in the school building during the school day.

For your information, a pamphlet describing the survey in greater detail is attached. Your child's participation in this survey is extremely important. This survey will benefit all migrant school children in North Carolina. If you have any questions, please feel free to call Dr. Betty J. DeBerry, Survey Project Director, at (919)733-3853. Thank you for your cooperation.

Sincerely,

  
 George G. Dudney, D.D.S.  
 Chief, Dental Health Section

PLEASE COMPLETE AND SIGN THIS FORM AND RETURN TO YOUR CHILD'S TEACHER BY TOMORROW.

SCHOOL: \_\_\_\_\_ CLASSROOM TEACHER: \_\_\_\_\_

I GIVE PERMISSION FOR \_\_\_\_\_ to participate  
 (Child's Name)

I DO NOT GIVE PERMISSION FOR \_\_\_\_\_ to participate in  
 (Child's Name)

North Carolina Oral Health Survey. I understand that the survey will include a dental examination and the confidential use of information from my child's school records.

If your child has a history of heart trouble, rheumatic fever, or diabetes, please check the box(es) below:

Heart     Rheumatic     Diabetes

\_\_\_\_\_  
 (Parent or Guardian' Signature)

\_\_\_\_\_  
 (Date)

\_\_\_\_\_  
 (Address and Telephone Number)



DH - (919)733-3853

North Carolina Department of Human Resources  
Division of Health Services  
P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor  
David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.  
State Health Director

Querido padre o persona encargada:

La Sección de Salud Dental está llevando a cabo un estudio a través de todo el estado de Carolina del Norte con niños migrantes de edad escolar para determinar cuantos problemas de caries y enfermedades de la encía existe entre nuestros niños. Este estudio se está llevando a cabo con la cooperación de la escuela de su hijo, Departamento de Instrucción Pública de Carolina del Norte, la División de Programas de Ayuda. Los resultados serán utilizados para planificar programas de salud y educación para niños migrantes.

Esto es solo un estudio. La escuela deberá proveer información adicional del registro de su hijo. **LOS RESULTADOS DE ESTA INVESTIGACION SON Estrictamente Confidencial.** El estudio será supervisado por un dentista certificado y se llevará a cabo en el edificio escolar en día de clases.

Para mayor información, le estamos enviando un folleto con más detalles sobre este estudio. La participación de su hijo en este estudio es de suma importancia. Este estudio beneficiará a todos los niños migrantes de edad escolar en Carolina del Norte. Si tiene alguna pregunta, por favor llame a la doctora Betty J. DeBerry, directora de este estudio, al teléfono: (919) 733-3853. Muchas gracias por su cooperación.

Sinceramente,  
*George G. Dudley*  
George G. Dudley, D.D.S.  
Jefe, Sección de Salud Dental

**POR FAVOR, COMPLETE Y FIRME ESTA FORMA Y DEVUELVALA MAÑANA A LA MAESTRA**

ESCUELA \_\_\_\_\_ MAESTRA \_\_\_\_\_

\_\_\_\_\_ AUTORIZO a \_\_\_\_\_ a participar  
(nombre del niño)

\_\_\_\_\_ NO AUTORIZO a \_\_\_\_\_ a participar en el  
(nombre del niño)

estudio de Salud Oral de Carolina del Norte. Entiendo que el estudio incluye un examen dental y el uso confidencial de información del registro escolar de mi hijo (a).

Si su hijo (a) tiene o ha tenido problemas del corazón, fiebre reumática o diabetes, por favor indíquelo en el espacio provisto:

\_\_\_\_\_ Corazón      \_\_\_\_\_ Reumática      \_\_\_\_\_ Diabetes

\_\_\_\_\_ (firma del padre o encargado)

\_\_\_\_\_ (fecha)

\_\_\_\_\_ (dirección y teléfono)

PARENT AND STUDENT QUESTIONNAIRE

North Carolina Department of Human Resources  
Division of Health Services  
Dental Health Section

ORAL HEALTH SURVEY QUESTIONNAIRE

Dear Parent:

As part of the survey we need your assistance in completing this questionnaire. After completing the questionnaire, please return the forms in the envelope provided to your child's teacher. It is very important that the questionnaire be completed and returned as soon as possible.

The questionnaire is confidential and will not be released to anyone without your permission. If you have any questions about this questionnaire, please call Dr. Betty DeBerry, Project Director at (919)733-3853.

Q-1 NAME \_\_\_\_\_

Q-2 YOUR SEX

- 1 MALE
- 2 FEMALE

Q-3 YOUR PRESENT AGE: \_\_\_\_\_ YEARS

Q-4 WHICH OF THE GROUPS BELOW BEST DESCRIBE YOUR NATIONAL ORIGIN OR ANCESTRY?

- 1 COUNTRIES of CENTRAL or SOUTH AMERICA
- 2 CHICANO
- 3 CUBAN
- 4 HAITIAN
- 5 MEXICAN
- 6 PUERTO RICAN
- 7 BLACK, AFRO AMERICAN
- 8 WHITE
- 9 OTHER

Q-5 WHAT IS THE HIGHEST LEVEL OF EDUCATION THAT YOU HAVE COMPLETED?

- 1 LESS THAN HIGH SCHOOL GRADUATE
- 2 HIGH SCHOOL GRADUATE
- 3 BEYOND HIGH SCHOOL

PLEASE CONTINUE WITH QUESTION 6 ON THE REVERSE SIDE.

PAGE 2

Q-6

WHAT WAS YOUR APPROXIMATE NET FAMILY INCOME FROM ALL SOURCES BEFORE TAXES IN 1987?

- 1 LESS THAN \$5,000
- 2 \$5000 TO \$9,999
- 3 \$10,000 TO \$14,999
- 4 \$15,000 OR MORE

THE NEXT FEW QUESTIONS ARE ABOUT YOUR DENTAL CARE.

Q-7

HOW OFTEN DO YOU VISIT A DENTIST?

- 1 ONCE A YEAR
- 2 TWICE A YEAR
- 3 WHEN IN PAIN
- 4 NEVER

Q-8

HOW OFTEN DO YOU TAKE YOUR CHILD TO THE DENTIST?

- 1 ONCE A YEAR
- 2 TWICE A YEAR
- 3 WHEN IN PAIN
- 4 NEVER

Q-9

DO YOU HAVE A TOOTHBRUSH AT HOME?

- 1 YES
- 2 NO

Q-10

WHAT DO YOU THINK IS THE BEST TYPE OF TOOTHBRUSH TO USE?

- 1 SOFT
- 2 MEDIUM
- 3 HARD
- 4 I DON'T KNOW

Q-11

WHAT TYPE OF TOOTHPASTE DO YOU USE?

- 1 ONE WITH FLUORIDE
- 2 ONE WITHOUT FLUORIDE
- 3 DON'T KNOW IF IT HAS FLUORIDE OR NOT
- 4 DON'T USE TOOTHPASTE

Q-12

DO YOU KNOW WHAT DENTAL FLOSS IS?

- 1 YES
- 2 NO

PLEASE CONTINUE WITH QUESTION 13 ON THE NEXT PAGE

PAGE 3

Q-13 IF YES, HOW OFTEN DO YOU USE DENTAL FLOSS?

- 1 ONCE A DAY
- 2 TWICE A DAY
- 3 MORE THAN TWICE A DAY
- 4 NEVER

Q-14 IS FLUORIDE GOOD FOR YOUR TEETH OR GOOD FOR YOUR GUMS?

- 1 GUMS
- 2 TEETH
- 3 I DON'T KNOW

Q-15 WHAT DO YOU THINK CAUSES TOOTH DECAY?

- 1 FLUORIDE
- 2 SEALANTS
- 3 BETWEEN MEAL SWEETS
- 4 FLOSSING
- 5 I DON'T KNOW

Q-16 HAVE YOU HEARD ABOUT SEALANTS?

- 1 YES
- 2 NO

Q-17 WHAT DO YOU THINK SEALANTS ARE USED FOR?

- 1 PREVENT GUM DISEASE
- 2 PREVENT TOOTH DECAY
- 3 HOLD DENTURES IN PLACE
- 4 I DON'T KNOW

Q-18 WHAT DO YOU THINK MIGHT CAUSE GUMS TO BLEED (GINGIVITIS)?

- 1 SEALANTS
- 2 SWEETS
- 3 PLAQUE
- 4 FLUORIDE
- 5 I DON'T KNOW

Q-19 WHAT DO YOU THINK CAN PREVENT GUM DISEASE?

- 1 BRUSHING AND FLOSSING
- 2 USING FLUORIDES
- 3 SEALANTS
- 4 REGULAR VISITS TO YOUR DENTIST
- 5 I DON'T KNOW

THIS COMPLETES THIS QUESTIONNAIRE. PLEASE RETURN IT TO YOUR CHILD'S TEACHER AS SOON AS POSSIBLE. THANK YOU.

North Carolina Department of Human Resources  
Division of Health Services  
Dental Health Section

ORAL HEALTH SURVEY QUESTIONNAIRE

Dear Student:

As part of the examination we would like for you to answer this questionnaire. The questionnaire has questions regarding your dental knowledge and dental health care. After you have completed the questionnaire please return it to your teacher.

Q-1 NAME \_\_\_\_\_

Q-2 YOUR SEX

- 1 MALE
- 2 FEMALE

Q-3 YOUR PRESENT AGE: \_\_\_\_\_ YEARS

Q-4 WHICH OF THE GROUPS BELOW BEST DESCRIBE YOUR NATIONAL ORIGIN OR ANCESTRY?

- 1 COUNTRIES of CENTRAL or SOUTH AMERICA
- 2 CHICANO
- 3 CUBAN
- 4 HAITIAN
- 5 MEXICAN
- 6 PUERTO RICAN
- 7 BLACK, AFRO AMERICAN
- 8 WHITE
- 9 OTHER

Q-5 WHAT GRADE ARE YOU CURRENTLY IN?

- 1 4TH-5TH GRADE
- 2 6TH-8TH GRADE
- 3 9TH-10TH GRADE
- 4 11TH-12TH GRADE

Q-6 HOW OFTEN DO YOU VISIT A DENTIST?

- 1 ONCE A YEAR
- 2 TWICE A YEAR
- 3 WHEN IN PAIN
- 4 NEVER

PLEASE CONTINUE WITH QUESTION 7 ON THE REVERSE SIDE.

PAGE 2

Q-7 HOW OFTEN DO YOU TAKE YOUR CHILD TO THE DENTIST?

- 1 ONCE A YEAR
- 2 TWICE A YEAR
- 3 WHEN IN PAIN
- 4 NEVER

Q-8 DO YOU HAVE A TOOTHBRUSH AT HOME?

- 1 YES
- 2 NO

Q-9 WHAT DO YOU THINK IS THE BEST TYPE OF TOOTHBRUSH TO USE?

- 1 SOFT
- 2 MEDIUM
- 3 HARD
- 4 I DON'T KNOW

Q-10 WHAT TYPE OF TOOTHPASTE DO YOU USE?

- 1 ONE WITH FLUORIDE
- 2 ONE WITHOUT FLUORIDE
- 3 DON'T KNOW IF IT HAS FLUORIDE OR NOT
- 4 DON'T USE TOOTHPASTE

Q-11 DO YOU KNOW WHAT DENTAL FLOSS IS?

- 1 YES
- 2 NO

Q-12 IF YES, HOW OFTEN DO YOU USE DENTAL FLOSS?

- 1 ONCE A DAY
- 2 TWICE A DAY
- 3 MORE THAN TWICE A DAY
- 4 NEVER

Q-13 IS FLUORIDE GOOD FOR YOUR TEETH OR GOOD FOR YOUR GUMS?

- 1 GUMS
- 2 TEETH
- 3 I DON'T KNOW

Q-14 WHAT DO YOU THINK CAUSES TOOTH DECAY?

- 1 FLUORIDE
- 2 SEALANTS
- 3 BETWEEN MEAL SWEETS
- 4 FLOSSING
- 5 I DON'T KNOW

PLEASE CONTINUE WITH QUESTION 15 ON THE NEXT PAGE



PAGE 3

Q-15 HAVE YOU HEARD ABOUT SEALANTS?

- 1 YES
- 2 NO

Q-16 WHAT DO YOU THINK SEALANTS ARE USED FOR?

- 1 PREVENT GUM DISEASE
- 2 PREVENT TOOTH DECAY
- 3 HOLD DENTURES IN PLACE
- 4 I DON'T KNOW

Q-17 WHAT DO YOU THINK MIGHT CAUSE GUMS TO BLEED (GINGIVITIS)?

- 1 SEALANTS
- 2 SWEETS
- 3 PLAQUE
- 4 FLUORIDE
- 5 I DON'T KNOW

Q-18 WHAT DO YOU THINK CAN PREVENT GUM DISEASE?

- 1 BRUSHING AND FLOSSING
- 2 USING FLUORIDES
- 3 SEALANTS
- 4 REGULAR VISITS TO YOUR DENTIST
- 5 I DON'T KNOW

THIS COMPLETES THIS QUESTIONNAIRE. PLEASE RETURN IT TO YOUR TEACHER. THANK YOU.

DHS T 445 (6/88)  
Dental Health

CLINICAL EXAMINATION FORM



DIAGNOSTIC CRITERIA FOR CARIES

## DIAGNOSTIC CRITERIA FOR CARIES

### SUMMARY

#### DIAGNOSTIC CRITERIA FOR DENTAL CARIES

- I. FRANK LESIONS
- II. LESIONS NOT SHOWING FRANK CAVITATION (INCIPIENT)
  - A. PIT AND FISSURES ON OCCLUSAL, FACIAL AND LINGUAL SURFACES O EXPLORER "CATCHES AND ONE OR MORE OF FOLLOWING PRESENT"
    - 1. SOFTNESS AT BASE OF AREA, OR
    - 2. OPACITY ADJACENT TO PIT OR FISSURE, OR
    - 3. SOFTENED ENAMEL ADJACENT TO PIT OR FISSURE
  - B. SMOOTH AREAS ON FACIAL AND LINGUAL SURFACES O ETCHED SURFACE OR WHITE SPOT AS EVIDENCE OF DEMINERALIZATION AND
    - 1. PENETRATION OF EXPLORER, OR
    - 2. SCRAPING AWAY OF ENAMEL WITH EXPLORER
  - C. PROXIMAL SURFACES
    - O ACCESSIBLE AREAS SCORED SAME AS SMOTHER SURFACES
    - O UNACCESSIBLE AREAS
      - 1. DEFECT IN ENAMEL DETECTED BY TACTILE METHODS AND ONE OF FOLLOWING:
        - <> SOFTNESS
        - <> OPACITY
        - <> SHADOW
      - 2. SHADOW DETECTED BY TRANSILLUMINATION (ANTERIOR TEETH ONLY).

#### DEFINITIONS AND CRITERIA

FOR OTHER VARIABLES IN DMFS/dfs INDICES

-ERUPTED TEETH. TEETH ARE CONSIDERED TO BE ERUPTED WHEN ANY PART OF THE TOOTH PROTRUDES THROUGH THE GINGIVAE.

-FILLED TEETH. PERMANENT TEETH RESTORED FOR COSMETIC REASONS, BECAUSE OF FRACTURE, MALFORMATION OR HYPOPLASIA (ANY REASON OTHER THAN DENTAL CARIES) ARE EXCLUDED.

-NON-VITAL TEETH. SCORE IN USUAL MANNER.

-TEETH WITH ENAMEL DEFECTS. SCORE IN USUAL MANNER.

-MALFORMED TEETH. SCORE IN USUAL MANNER

-BANDED OR BRACKETED TEETH. SCORE ALL VISIBLE SURFACES IN USUAL MANNER

-SUPERNUMERARY TEETH. SCORE THE "LEGITIMATE" OCCUPANT OF TOOTH SPACE.

-PERMANENT AND PRIMARY TOOTH PRESENT. SCORE PERMANENT TOOTH.

-THIRD MOLARS. DO NOT SCORE.

-REMAINING ROOTS. SCORE AS ALL SURFACES DECAYED.

-DECAYED AND FILLED ON SAME SURFACE. DECAY HAS PRIORITY.

-ADHESIVE SEALANTS. IF NO RESTORATION OR DECAY PRESENT, SCORE AS NORMAL

-SURFACE DEFINITIONS:

ANTERIOR TEETH: INCISAL EDGES NOT SEPARATE SURFACES. PROXIMAL INVOLVES ADJACENT LINGUAL OR FACIAL SURFACE IF EXTENDS 1/3 DISTANCE TO OPPOSITE PROXIMAL SURFACE.

POSTERIOR TEETH: DEFINED BY LINE ANGLES.

PIT AND FISSURE: DEFINED BY SITE OF DECAY OR RESTORATION.

ADDITIONAL CONSIDERATIONS IN DIAGNOSING DENTAL CARIES

1. STAIN AND PIGMENTATION SHOULD NOT BE REGARDED AS EVIDENCE OF DENTAL CARIES.
2. WHEN IN DOUBT CALL IT SOUND
3. EXAMINATION METHOD SHOULD BE SUCH THAT AN EXISTING CARIOUS LESION SHOULD HAVE AN EQUAL CHANCE FOR DETECTION IN EVERY SUBJECT.

DENTAL TREATMENT NEEDS

## GENERAL INSTRUCTIONS:

### DENTAL TREATMENT NEEDS

In examining for dental treatment needs, a code is used to designate the treatment required for each tooth space. These codes are as follows:

- 0 = No treatment needed
- S = Sealant Needed
- 1 = 1 surface restoration
- 2 = 2 surface restoration (or 2 one surface restorations)
- 3 = 3 surface restoration (or 3 one surface restorations or 2 surface + 1 surface restorations)
- 4 = 4 or 5 surface restoration (may or may not need a crown)
- 5 = Extraction of primary tooth
- 6 = Extraction of permanent tooth
- 7 = Tooth replacement after extraction of permanent tooth
- 8 = Tooth replacement when permanent tooth already missing and replacement needed

A code "S" is recorded when the explorer catches in a pit or fissure area without the obvious signs of decay, as described in Section VII ("Measurement of Caries Experience"). The "S" code is to be used for permanent teeth only (lingual surfaces of maxillary incisors and molars, occlusal surfaces of maxillary and mandibular bicuspid and molars, and buccal surfaces of mandibular molars). Use your clinical judgement in making these calls. In some cases where defects occur without soft bases where permanent restorations may be the treatments of choice rather than sealants (i.e., buccal grooves of lower molars where closure is incomplete resulting in a catch but no soft base). In order to indicate the need for sealant, the tooth must be erupted sufficiently to allow the examiner to probe the entire occlusal surface.

If a portion of an existing restoration is defective or has adjacent recurrent decay, but part of the restoration is intact, the entire restoration should be indicated for replacement. In other words, dovetailing of a new restoration into a satisfactory, existing portion of a restoration is not permitted.

When there is a treatment requirement for both a primary and permanent tooth in the same space, e.g., a restoration in a permanent tooth and extraction of a primary tooth, the requirement for both the permanent and primary tooth should be recorded.

Other than the need for extraction, no treatment needs for primary incisors should be indicated for any children examined in the survey. Thus, all primary incisors should be coded either as "0" or "5". A complete array of treatment needs may be recorded for primary cuspids and molars for all children examined in the survey through the age of 9. For children 10 and older, treatment needs for posterior primary teeth should be limited to the codes "0" and "5".

It is not necessary to record the need for space maintenance or tooth replacement following the designated extraction of primary teeth. This need will be automatically handled by statistical programming, according to the age of the child.

A code of "7" should be recorded when a permanent tooth is designated for extraction, and when the examiner judges that a tooth replacement is needed and



feasible. If following extraction the examiner believes that a replacement of the tooth is not warranted or possible, e.g., inadequate space, no opposing tooth or no suitable tooth for an abutment exists, a code of "6" only should be recorded.

COMMUNITY PERIODONTAL TREATMENT NEEDS

COMMUNITY PERIODONTAL INDEX OF TREATMENT NEEDS (CPITN)

Sextants (index teeth) are to be scored using the following codes:

**Ages 12-19 (Grades 7-12)**

- 4 = 6 mm or deeper pathologic pocket
- 3 = 4 or 5 mm pathologic pocket
- 2 = supra- or subgingival calculus or defective margin of filling or crown
- 1 = bleeding after gentle probing
- 0 = healthy periodontal tissues
- M = no score

**Ages 7-11 (Grades 2-6)**

- 2 = supra-gingival calculus or defective margin of filling or crown
- 1 = bleeding after gently touching the free gingival margin
- 0 = healthy periodontal tissues
- M = no score