

Meeting the Dental Treatment Needs of Indigent Rural Children

A. L. HEISE, DMD, MPH, M. R. MULLINS, DMD, MPH,
CLEM J. HILL, DMD, and JEAN H. CRAWFORD, AB

Dr. Heise and Dr. Mullins are members of the faculty of the Department of Community Dentistry in the College of Dentistry of the University of Kentucky. Dr. Heise is an associate professor, Dr. Mullins is an assistant professor, and at the time of the study Mrs. Crawford was a research associate. Dr. Hill is an associate professor in the Department of Pedodontics.

Dr. Wesley O. Young, former chairman of the Department of Community Dentistry, developed the project described and co-directed it with Dr. John Mink, chairman of the Department of Pedodontics. The Community Health Service, Health Services and Mental Health Administration, provided support under Public Health Service grant 33968.

Tearsheet requests to A. L. Heise, DMD, College of Dentistry, University of Kentucky, Lexington, Ky. 40506.

THE UNIVERSITY of Kentucky College of Dentistry, in the summer of 1967, instituted a 5-year program of incremental dental care for school children in Wolfe County, in an economically depressed rural area of Appalachia. The dental treatment was provided by senior dental students, who were required to participate in the program. The general objectives of the project, as stated in the original proposal, were:

1. To demonstrate the impact that a communitywide program of education and treatment would have on the attitude of children and their parents toward dental health
2. To evaluate a mechanism by which dental students

could provide additional manpower to solve the unmet health needs of the community

3. To determine the dental treatment requirements of children in a depressed area when care is provided on an incremental basis

4. To gather statistical data on the extent to which an extensive community effort (which combines parent-patient education, preventive measures, and the provision of care) reduces the prevalence of untreated dental disease.

5. To evaluate the impact of such a program on the attitudes of dental students toward community health problems.

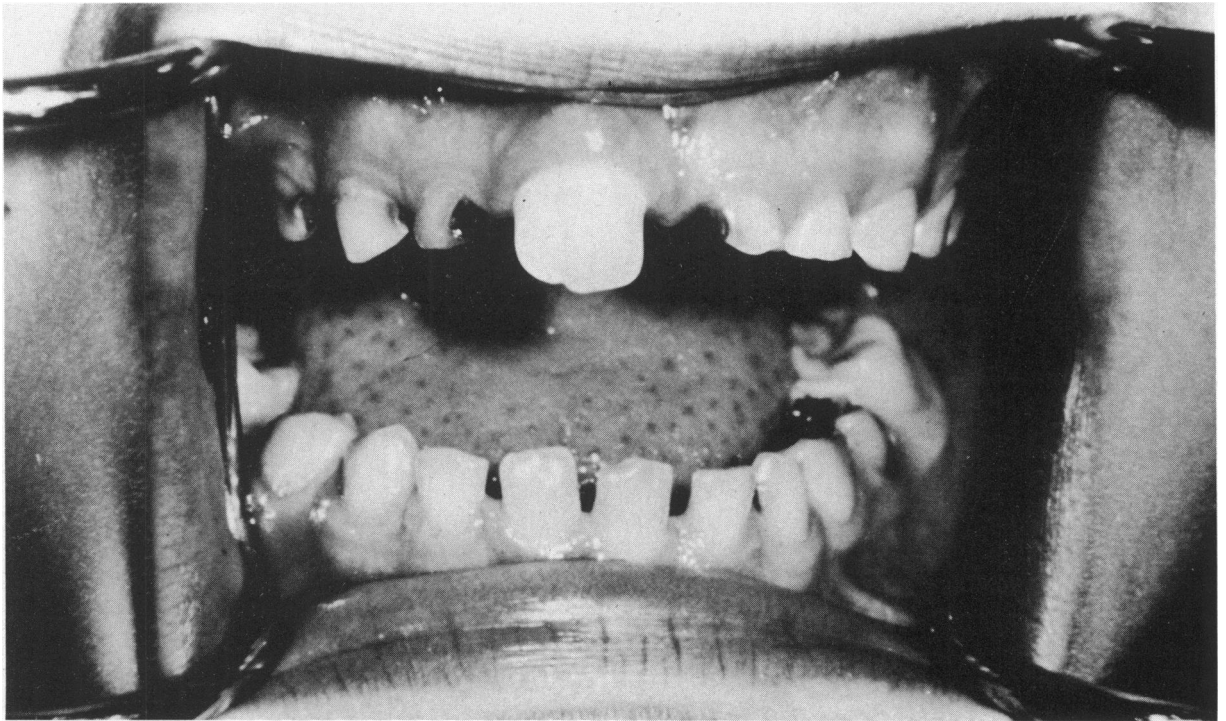
In this paper we report those results concerned with the reduction of untreated dental disease. Results related to the other objectives will be reported later.

Setting of Project

Wolfe County, Ky., was chosen for the project primarily for two reasons: (a) it is an area where poverty, a lack of facilities for the disadvantaged, a shortage of professional personnel, and fluoride-deficient drinking water have combined to make dental disease rampant and dental treatment a rarity, and (b) it is easily accessible to the university—only a 1½ hour drive over a limited-access highway.

Wolfe County is in the mideastern part of the State in the foothills of the Appalachian Mountains. It is sparsely populated, and about half of the population of 6,534 live in rural farming areas. The homes are widely scattered throughout winding valleys wherever a few acres of flat, tillable land are available for raising vegetables and a little tobacco. Although two-thirds of the

Figure 1. Extensive dental caries in a child in Wolfe County, Ky.



county's 128,000 acres are devoted to farming, less than one-tenth of these acres are actually suitable for cultivation (1). Narrow dirt and gravel roads, which become nearly impassable during inclement weather, are the only means of access to most of the small farms. There are several small villages in the county, the largest of which is Campton, the county seat (population 640). The county currently has three con-

solidated elementary schools and one consolidated high school. At the beginning of this project, many children were still attending one of the county's 14 one-room schoolhouses.

The children in Wolfe County have been raised on fluoride-deficient water, and extensive dental caries is common (fig. 1). (The public water supply in Campton was fluoridated 9 months before completion of our project.) Health services

Table 1. Socioeconomic characteristics of populations of the United States, Kentucky, and Wolfe County

Characteristic	United States 1970	Kentucky 1960	Wolfe County 1960
Population per square mile	50.5	76.2	29.0
Education:			
Median school years	10.6	8.7	7.9
Percent with <5 school years	8.4	11.5	24.6
Percent completed high school or more	41.1	21.4	9.2
Family income:			
Median	\$5,660	\$3,350	\$1,455
Percent with < \$3,000	21.4	11.6	80.8
Percent with > \$10,000	15.1	6.6	.0
Rural farmers, percent of population	7.5	7.7	53.4
Housing units:			
Percent sound and all plumbing facilities	74.0	53.4	8.8
Percent with telephones	78.5	61.5	16.7
Percent with no motorized transportation	21.6	25.4	51.4

SOURCE: Reference 3.

are provided by one dentist, one physician, and the staff of the county health department. The practice of the one dentist consists primarily of emergency care. The one physician in the county has been described in a national publication as the "busiest physician in America." He sees an average of 140 patients each day and in 1965 delivered more than 400 babies (2).

Wolfe County has not shared in the general prosperity of the nation. Its socioeconomic characteristics are unfavorable compared with the rest of Kentucky or with the nation (table 1). In 1960 one-fourth of the adults 25 years of age and over in Wolfe County had less than 5 years of formal education. Less than 1 of 10 had completed high school. Eight of 10 Wolfe County families had an annual income under \$3,000. The median family income in the State was nearly 2½ times greater than that in Wolfe County, and that in the nation was four times greater. Less than 1 of 10 Wolfe County housing units was sound and supplied with all plumbing facilities, and far less than half of these units had motorized transportation available for the inhabitants (3).

In 1966 the Kentucky Department of Economic Security estimated that there were 1,272 "available workers" in the county. Of those, only 150 were legally unemployed; the remaining 1,122 were persons who were underemployed or who would have entered the labor force if jobs had been available (1). This figure takes on even greater significance when it is noted that the "total civilian labor force" in Wolfe County in 1960 was only 1,400 persons (3).

Description of Project

Each year of the project the fourth-year class of approximately 50 dental students was divided into two groups. One group was assigned to the project during June and the other during July. Participation in the project was mandatory; each student received a stipend, an allowance for transportation and living expenses, and 6 hours of academic credit. The students provided all of the treatment received by the children who participated in the project. Supervising faculty, who were on the site at all times, received no additional salary, but were reimbursed for travel and living expenses.

The dental division of the Kentucky Department of Health provided five two-operatory dental trailers, which were used as a clinic facility for

the project. These were supplemented during the last 2 years of the project by a mobile clinic, purchased by the college for this and other projects. The dental students were assigned in pairs to each operatory; one student served as the clinician and the other as the assistant.

Two second-year dental students were employed as clerks on the project, and they were responsible for equipment, supplies, records, scheduling, and transportation of patients.

During the first year of the project initial dental care was offered to all children in the first, second, and third grades in the county. In subsequent years incremental care was offered to those who had previously been treated, and initial care was offered to each new class of first graders. Complete dental care except orthodontics was provided, and each year only a small number of patients did not receive complete treatment. During the first week of each year each child whose parents had requested treatment received an oral examination, a topical application of fluoride, and instruction in oral hygiene from a senior dental hygiene student.

Early in the project an attempt was made to conduct group sessions for the dental health education of children and their parents. This effort, however, did not prove feasible because the children were seldom accompanied by their parents. Therefore all patient education was conducted on a one-to-one basis at chairside, and parent education was also done one to one whenever possible. Inservice training sessions on dental health education were conducted during the school year for all elementary school teachers in the county at two different times during the project period. These sessions, conducted by dental hygienists, were designed to encourage teachers to include dental health education in their everyday teaching.

Two university-owned station wagons were used to provide transportation for nearly all patients. It was the consensus of the project administrators that the project would not have been successful without the provision of transportation. During the early days of the project an experienced school bus driver was employed to drive a bus over his usual routes to pick up the children scheduled for appointments, nearly all of whom needed transportation. This arrangement, however, proved to be inefficient and ineffective for transporting to the clinic the more

than 50 percent of appointed patients who needed help to get there. Consequently the bus was replaced by the two station wagons, driven by the student clerks, who were often accompanied by one or two student dentists. This method of transportation provided an opportunity for professional personnel from the project to have direct contact with the parents and eliminated failed appointments.

The location of the clinic facility and the widely scattered clinic population created many small frustrations. The project, however, ran smoothly and was well accepted by the dental students, the faculty, the children, and the parents. The operation is described in more detail in three earlier papers (4-6).

Methods

To determine the extent of the reduction, if any, in untreated dental disease during the project period, we conducted baseline and followup examinations on all elementary school children in the county who were in school on the day of the examinations. The baseline examinations were conducted in the spring of 1967 before the first summer's operation of the project; the followup examinations were conducted in the fall of 1971 after the last summer's operation.

Portable dental chairs and lights, mirrors, and explorers were used for all examinations. With one exception standard DMF and def criteria and standard procedures were followed. ("DMF" means decayed, missing, and filled permanent teeth—capital letters always denote permanent teeth; "def" means decayed, indicated for extraction, and filled deciduous, or primary teeth—lowercase letters denote deciduous teeth.) The exception was for those primary teeth designated "e." In addition to those primary teeth "indicated for extraction," the "e" component includes those primary teeth extracted early because of caries. Normal exfoliation patterns and the age of the child were the criteria used in making this determination.

Baseline examinations were conducted by two clinical dentists who had been trained in the use of the DMF Index and had been calibrated by a public health dentist. Followup examinations were conducted by three public health dentists and a clinical dentist who calibrated themselves on the morning of the examinations.

All results were recorded on optical scan sheets;

Table 2. Age distribution of children examined in 1967 for baseline dental data and in 1971 for followup data, Wolfe County, Ky.

Age last birthday	Children examined 1967		Children examined 1971	
	Number	Percent	Number	Percent
6.....	88	11.3	82	9.8
7.....	75	9.7	95	11.4
8.....	96	12.4	105	12.5
9.....	74	9.5	123	14.7
10.....	121	15.6	119	14.2
11.....	112	14.4	126	15.1
12.....	106	13.7	111	13.3
13.....	104	13.4	76	9.1
6-13.....	776	100.0	837	100.0

tabulations were received on computer printouts. Sixth grade students chosen by the school principals served as recorders.

Results

Baseline examinations were completed on 790 children 6-14 years of age and followup examinations, on 895 children 5-17. Because of the small numbers in the extreme age groups, data are presented only for children 6-13—776 baseline and 839 followup subjects. The age distribution for both samples was essentially the same; the mean age was 9.7 years for the baseline students and 9.6 years for the followup subjects (table 2). No sex distribution is available for the baseline sample; there is no reason, however, to believe that it would have differed significantly from that for the followup sample, which consisted of 52 percent males and 48 percent females.

The data from the baseline examination confirmed our suspicions that the dental caries attack rate for children in Wolfe County was high and the level of dental care low (table 3). The caries attack rates for the permanent dentition were similar to those reported for nonfluoridated urban areas (7-9) and for two other fluoride-deficient rural Appalachian counties in Kentucky (10 and unpublished data from Department of Community Dentistry). There was more evidence, however, of caries in primary teeth in Wolfe County than in other locations (table 4). Although none of the other studies cited included extracted primary teeth in the "e" component, we do not believe that this inclusion substantially alters the Wolfe County results.

The percentage of children in Wolfe County who were caries free was considerably lower than the percentage reported in urban areas. Also, the level of dental care (F/DMF and f/def) was lower for Wolfe County children. Only one of every five permanent teeth that had been attacked by decay had been restored and only 1 of every 16 carious primary teeth.

The dental caries experience of all Wolfe County elementary school children who were between the ages of 6 and 13 at completion of the project is shown in table 5. The caries attack

rate was still high. Even when the followup data were adjusted for age, the average DMF and def were almost identical to those found at the time of the baseline examinations. The level of dental care (F/DMF and f/def), however, was increased threefold in the permanent teeth and eightfold in the primary teeth. Furthermore, an examination of the "M" component of the DMF indicated that fewer permanent teeth had been lost by the followup sample. In fact, the proportion of diseased permanent teeth which had been extracted (M/DMF) was reduced by 53 percent.

Table 3. Dental caries experience of children in Wolfe County, Ky., 6-13 years old at time of 1967 baseline examinations, by age last birthday

Age	Mean permanent teeth per child				Percent F/DMF	Mean primary teeth per child				Percent f/def	Percent caries free ¹
	D	M	F	DMF		d	e	f	def		
6.....	0.9	0.0	0.1	0.9	5	7.3	0.7	0.4	8.4	5	5
7.....	1.8	.0	.1	1.9	7	5.9	1.0	.3	7.3	5	4
8.....	2.4	.03	.2	2.6	8	5.3	1.0	.3	6.5	4	4
9.....	2.3	.2	.9	3.3	26	3.6	1.4	.6	5.5	10	1
10.....	2.9	.2	1.0	4.1	24	2.3	1.2	.2	3.8	7	3
11.....	3.8	.4	1.2	5.4	22	1.2	.6	.3	2.1	13	2
12.....	5.0	.5	1.5	7.0	22	(2)	(2)	(2)	(2)	(2)	3
13.....	5.8	.6	1.9	8.3	23	(2)	(2)	(2)	(2)	(2)	1
6-13....	3.2	.3	0.9	4.4	21	4.0	1.0	0.3	5.3	6	3

D—decayed teeth, M—missing teeth, F—filled teeth (capital letters denote permanent teeth); d—decayed teeth, e—primary teeth extracted early because of caries and carious teeth indicated for extraction, f—filled teeth (lowercase letters denote deciduous or primary teeth).

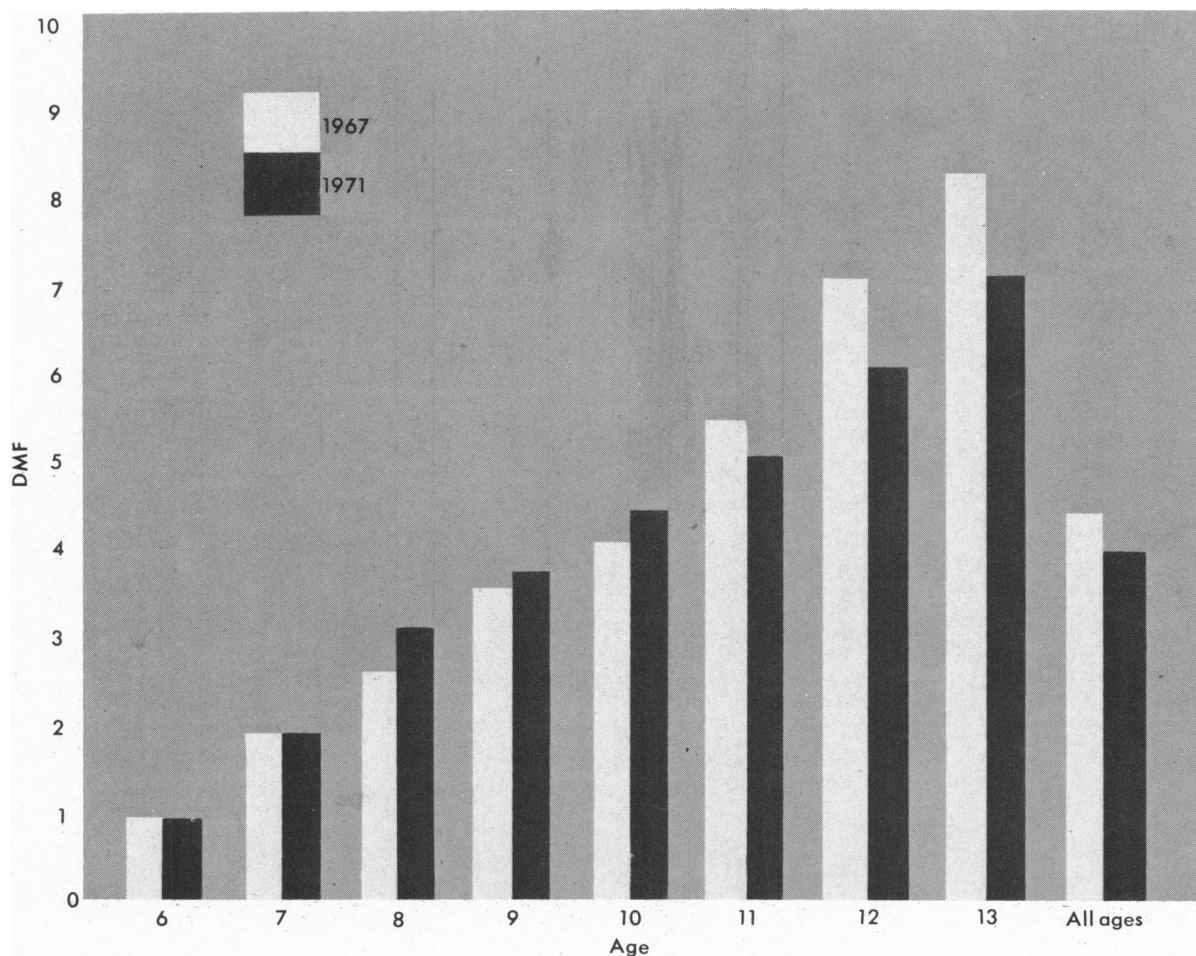
¹No DMF or def. ²Data not tabulated.

Table 4. Dental caries attack rates (DMF and def) for children 6-13 years, in Wolfe County, 3 non-fluoridated urban areas, and 2 nonfluoridated Appalachian counties, by age last birthday

Age	Wolfe County 1967	Nonfluoridated urban areas			Nonfluoridated rural Appalachian areas	
		Muskegan, Mich. ¹	Phillipsburg, N.J. ²	Montgomery and Prince Georges Counties, Md. ³	Martin County, Ky. ⁴	Harlan County, Ky. ⁵
DMF:						
6.....	0.9	0.8	0.5	0.4	1.7	1.1
7.....	1.9	2.0	1.6	1.1	2.5	1.8
8.....	2.6	2.8	2.6	1.9	4.1	2.2
9.....	3.3	3.8	3.3	2.4	3.9	3.1
10.....	4.1	4.9	3.6	3.1	4.9	3.9
11.....	5.4	6.3	4.4	4.4	5.9	4.8
12.....	7.0	8.7	.....	5.0	8.9	6.8
13.....	8.3	10.0	.....	6.2	10.4	.....
def:						
6.....	8.4	7.2	5.0	3.7	7.9	6.3
7.....	7.3	6.7	5.2	4.0	6.9	6.3
8.....	6.5	6.1	5.3	3.8	6.0	5.1
9.....	5.5	4.9	5.2	3.4	4.2	3.7
10.....	3.8	3.1	4.1	2.3	3.3	2.2
11.....	2.1	1.3	3.6	1.3	1.2	1.4

(...)—no data. SOURCES: ¹reference 7, ²reference 9, ³reference 8, ⁴reference 10, ⁵unpublished data from Department of Community Dentistry, University of Kentucky College of Dentistry. NOTE: For explanation of abbreviations see table 3 and Methods section.

Figure 2. Average DMF in Wolfe County, Ky., for children 6 to 13 years of age at time of 1967 baseline examinations and 1971 followup examinations, by age



For the 11- to 13-year olds this reduction was 61 percent.

Data from the two examinations are compared graphically in figures 2-4. During the 5 years of the project the caries attack rate appears to have increased slightly in the 8- to 10-year olds (fig. 2). Nevertheless, a reduction occurred in the 11- to 13-year olds, those children who were most likely to have participated in the program at some time. This trend is also evident in the primary dentition, with a noteworthy exception in the 6-year olds (fig. 3).

The level of dental care (F/DMF and f/def) increased at all ages in both the primary and permanent dentitions (tables 3 and 5). For permanent dentition, there was evidence of a decline in the relative level of care between the ages of 10 and 12, the period when a number of per-

manent posterior teeth are erupting and being exposed to the caries process.

The prevalence of untreated disease has been expressed as the total number of teeth needing restorations (D + d). (The number of primary teeth indicated for extraction is not included because the data were not tabulated to supply this information. The number of "e" teeth, however, is so small that the proportion of those indicated for extraction would probably not alter the results substantially.) At the end of the 5 years of the project, the prevalence of untreated dental disease (caries) in children 6-13 years in Wolfe County was reduced by 57 percent (fig. 4). This figure depicts the expected pattern of exfoliation of the primary teeth and the caries attack rate among the permanent teeth.

In table 6 the dental caries experience of the

Figure 3. Average def in Wolfe County, Ky., for children 6 to 11 years of age at time of 1967 baseline examinations and 1971 followup examinations, by age

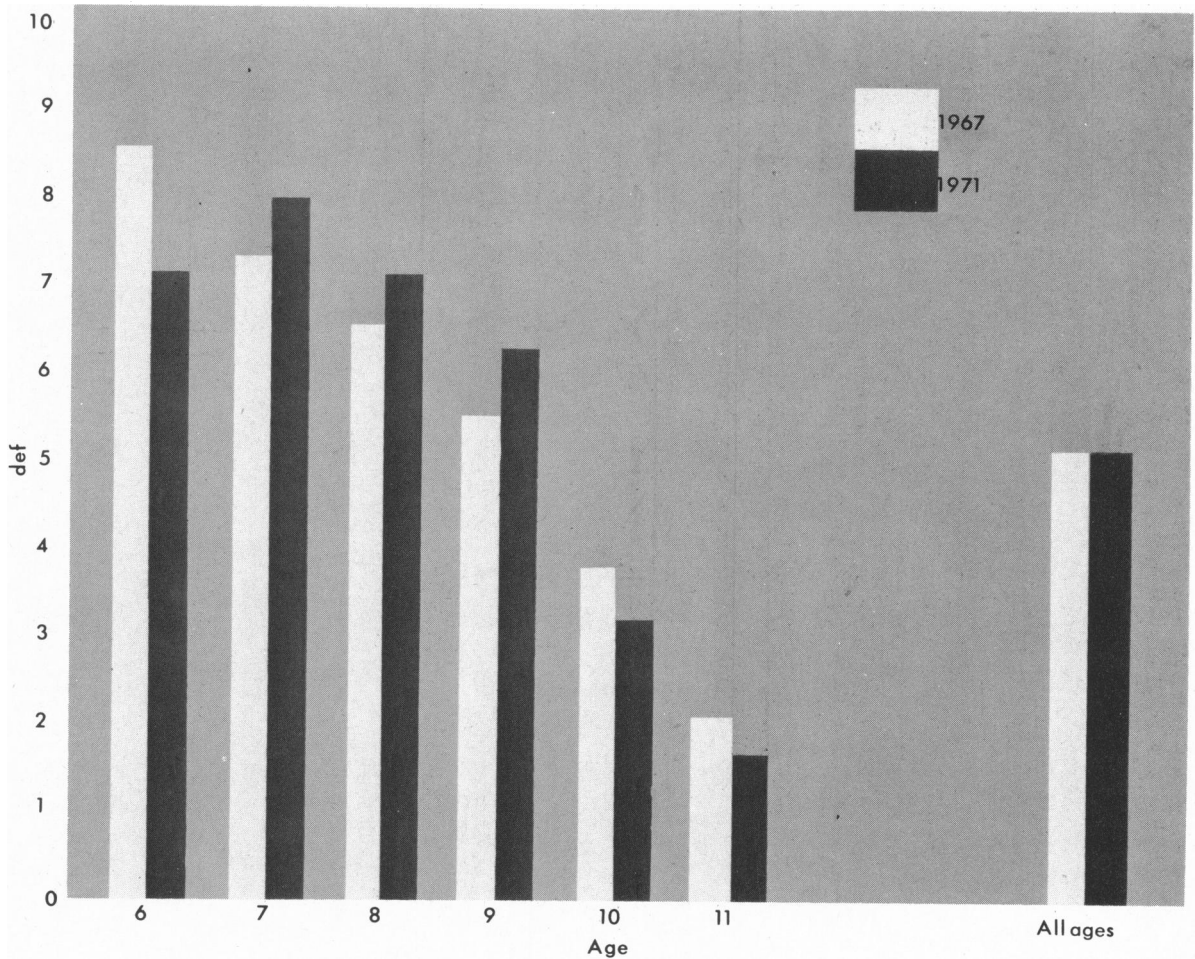
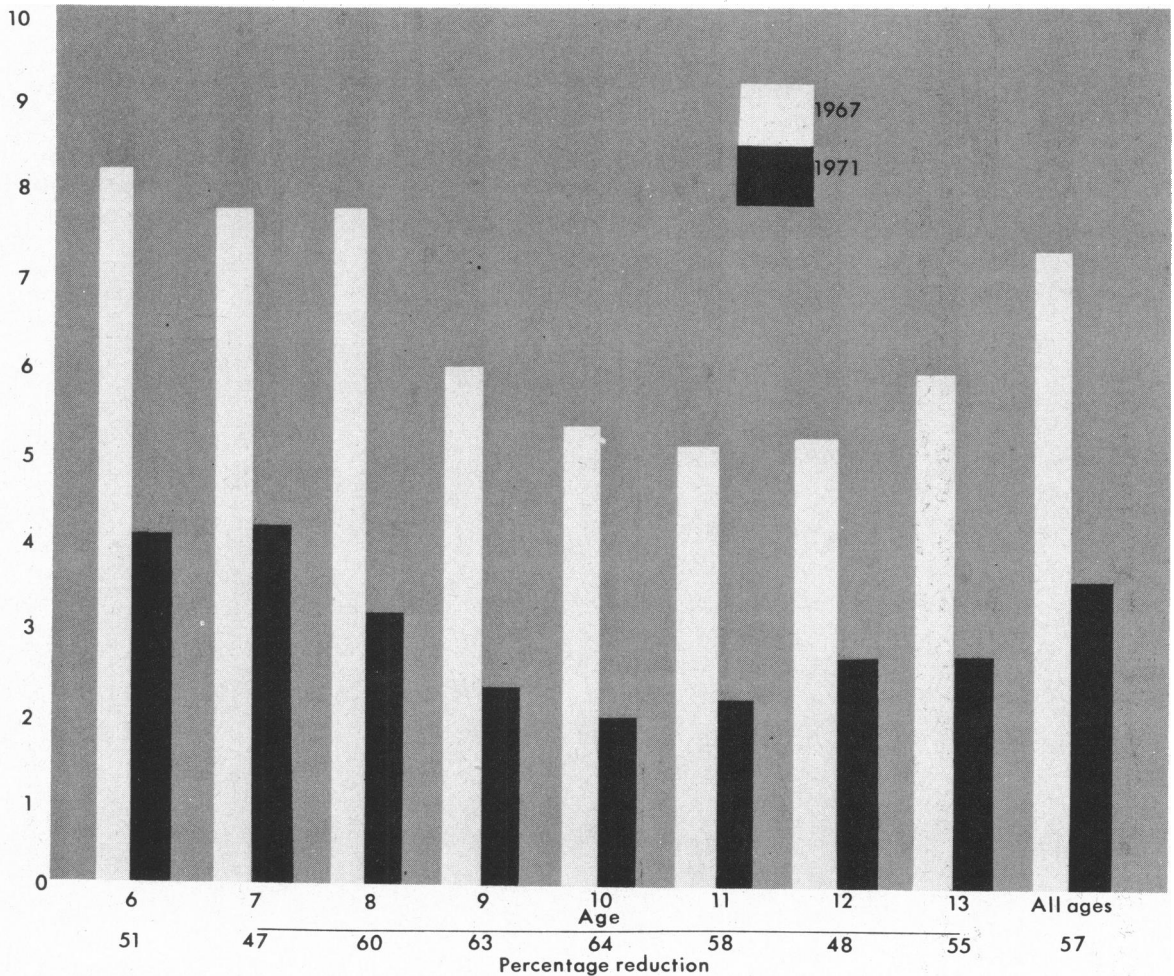


Table 5. Dental caries experience of children in Wolfe County, Ky., 6-13 years old at time of 1971 followup examinations, by age last birthday

Age	Mean permanent teeth per child				Percent F/DMF	Percent O/DMF	Mean primary teeth per child				Percent f/def	Percent O/def	Percent children caries free ¹
	D	M	F	DMF			d	e	f	def			
6.....	0.4	0.02	0.5	0.9	52	56	3.6	0.8	2.5	7.0	37	9	7
7.....	.8	.0	1.1	1.9	58	25	3.3	1.2	3.4	7.9	43	4	3
8.....	1.0	.1	1.9	3.0	63	10	2.1	1.7	3.2	7.0	45	8	5
9.....	1.0	.1	2.4	3.5	68	4	1.2	1.0	4.1	6.3	65	2	0
10.....	1.1	.2	3.1	4.4	71	5	.8	.4	2.2	3.4	65	18	1
11.....	1.6	.1	3.3	5.1	65	2	.5	.2	1.1	1.7	64	52	0
12.....	2.6	.1	3.3	6.0	55	5	(2)	(2)	(2)	(2)	(2)	(2)	5
13.....	2.6	.3	4.2	7.0	60	4	(2)	(2)	(2)	(2)	(2)	(2)	4
6-13.....	1.4	0.1	2.5	4.0	63	12	1.7	0.8	2.7	5.3	51	17	3

¹No DMF or def. ²Data not tabulated. ³When adjusted for age, average DMF=4.2. ⁴When adjusted for age, average def=5.2. NOTE: For explanation of abbreviations, see table 3 and Methods section.

Figure 4. Average number of teeth per child needing treatment (D + d) in Wolfe County, Ky., at time of 1967 baseline examinations and 1971 followup examinations, by age



NOTE: Scale at left is average number of teeth.

“average” 6- to 11-year old in Wolfe County in 1967 and 1971 is compared with the experience of the “average” 6- to 11-year old in the United States. Information on the U.S. children is based on a sample of 7,109 children, 6–11 years old, on whom dental caries data were collected in the National Health Survey (11). The caries attack rate for permanent teeth of the children was nearly 2½ times greater for Wolfe County than for the United States; for the primary teeth, the rate was nearly twice as great. Also, the odds were much greater that the average U.S. child would be free of caries in either dentition. The age distribution in the National Health Survey sample was similar to that for the 6- to 11-year olds in Wolfe County, although the Wolfe County group was slightly older (table 7).

While in 1967 children of Wolfe County were receiving only a fraction of the amount of dental care received by children in the United States, by 1971 the Wolfe County children were the recipients of a somewhat higher level of dental care (F/DMF and f/def). Nevertheless, the average child in Wolfe County in 1971 still had more untreated dental caries than the average child in the United States (2.7 versus 1.9).

Discussion

During the 5 years of the project 766 children, or approximately 91 percent of the elementary school enrollment of the county, received at least initial treatment. Data are not available to show how many of the 837 followup subjects were among the 766 who received at least initial treatment. They could not, however, have numbered

more than 732 (87 percent) since 34 of those treated during the first year were 10 years of age or older at that time. Neither do we know how much incremental treatment each child received. It is known that during the fifth summer of the project, there were only 167 recall patients, who represented only 30 percent of those who had received initial treatment at some time during the previous 4 years. Furthermore, although 54 percent of those treated during the first year returned to incremental care the second year, continuous participation dropped to 41 percent during the third year and to 21 percent during the fourth.

Table 6. Dental caries experience of children 6-11 years, Wolfe County 1967 and 1971 and United States 1960

Caries experience	Wolfe County 1967	Wolfe County 1971	United States 1960
<i>Permanent dentition</i>			
D	2.4	1.0	0.5
M .....	.1	.1	.1
F .....	.6	2.2	.8
DMF	3.2	¹ 3.3	1.4
Percent F/DMF	19	66	58
Percent children O/DMF		12	51
<i>Primary dentition</i>			
d	4.0	1.7	1.4
e	1.0	.8	.4
f .....	.3	2.7	1.2
def	5.3	² 5.3	3.0
Percent f/def	6	51	40
Percent children O def		17	31
Percent children caries free	3	3	..

¹ When adjusted for age against U.S. sample, 3.2.

² When adjusted for age against U.S. sample, 5.5.

NOTE: Numbers with decimals are means; those without are percentages. For explanation of abbreviations, see table 3 and Methods section.

Table 7. Percentage distribution of children 6-11 years, by age last birthday, Wolfe County 1967 and 1971 and United States 1965

Age	Wolfe County 1967	Wolfe County 1971	United States 1965
6	15.5	12.6	15.6
7	13.3	14.6	17.4
8	17.0	16.2	17.3
9	13.1	18.9	16.6
10	21.4	18.3	16.3
11	19.8	19.4	16.8

NOTE: The mean age in this age group for Wolfe County in both years was 8.7 years; for the United States in 1965, it was 8.5 years.

For these reasons two things are obvious: (a) results from the followup examinations do not come close to representing the results of optimum incremental care and (b) the removal of financial and transportation barriers and the establishment of rapport between professionals and the community will not necessarily guarantee optimum use of dental care facilities by an indigent rural population. Nevertheless, by the end of the program the level of dental care (F/DMF and f/def) for the elementary school children in Wolfe County had risen from a low of 21 percent to 63 percent F/DMF and from 6 percent to 51 percent f/def; dental treatment needs (D + d) had been reduced by 57 percent (from 7.2 teeth to 3.1). Among the 6- to 11-year olds the level of care had been raised to a point 11 percent greater than that for the U.S. sample. Nevertheless, the Wolfe County child in this age group still had greater treatment needs than the average U.S. child (2.7 teeth needing treatment versus 1.9). Program planners may well find that this is the most significant result presented in this paper, for it demonstrates that a high level of dental care (F/DMF and d/def) does not necessarily preclude the need for a dental care program.

The decrease in the def for 6-year olds at the time of the followup examinations is probably a reflection of timing. The baseline examinations were conducted in the spring before those children had an opportunity to participate in the program, and the followup examinations were conducted in September, only 6 weeks after many of those children had received treatment. Because extensive caries is common in Wolfe County, we may reasonably assume that many of the carious anterior teeth counted in the baseline examinations would have been extracted during treatment and thus not counted at the time of the followup examinations, since anterior primary teeth exfoliate naturally at about age 6.

The reduction in the caries attack rates among the older age groups may be a result of the topical fluoride applications received by each patient during each year of the project. The average number of years of participation in the project would be expected to be higher among the older age groups. It is recognized that the differences in caries attack rates between the two examinations for all age groups are small and may not be significant. They also may be the results of unknown factors.

Since the ultimate objective of any dental care program should be the preservation of teeth, the 53 percent reduction in the proportion of lost permanent teeth indicates some success for this project.

In analyzing our data we concluded that inclusion of prematurely extracted primary teeth in the "e" component presented no advantage and had the disadvantage of making comparisons with other results more difficult. We therefore do not recommend that other investigators follow this procedure.

REFERENCES

- (1) Kentucky Area Development Office: Development data for the Middle Kentucky River Development Area. Frankfort, Ky., 1967, pp. 38, 167.
- (2) Bergquist, L.: Kentucky doctor: one man's war against southern poverty. *Look* 29: 76-80, Nov. 16, 1965.
- (3) U.S. Department of Commerce, Bureau of the Census: County and city data book. U.S. Government Printing Office, Washington, D.C., 1962, pp. 2-11, 142-161.
- (4) Burkett, H. N., and Kleier, D. J.: Administrative problems of the "Wolfe County Project" in 1968. In 1967-68 Community Dentistry Fellowship Program: Summary and student reports, edited by W. O. Young, S. R. Rishman, and Jean H. Shannon. University of Kentucky College of Dentistry, Lexington, Ky., 1968, pp. 179-185.
- (5) Podshadley, A. G., Burkett, H. N., and Kleier, D. J.: A clinical field experience for fourth year dental students. *J Public Health Dent* 29: 27-35, winter 1969.
- (6) Podshadley, A. G., and Hill, C. J.: Dental education in Wolfe County, Kentucky. *Kentucky Dent Assoc J* 21: 7-13, October 1969.
- (7) Arnold, F. A., Jr., Dean, H. T., and Knutson, J. W.: Effect of fluoridated public water supplies on dental caries prevalence. *Public Health Rep* 68: 141-148, February 1953.
- (8) Russell, A. L.: Oral health study in children of suburban Washington, D.C. *Public Health Rep* 71: 626-631, June 1956.
- (9) Sogaro, L. H.: Phillipsburg, N.J.-Easton, Pa., fluoridation study. *Am Dent Assoc J* 69: 295-299, September 1964.
- (10) Newcomb, J. T., and Fister, J. N., III: The oral health status of the population in Martin County, Kentucky. In 1967-68 Community Dentistry Fellowship Program: Summary and student reports, edited by W. O. Young, S. R. Rishman, and J. H. Shannon. University of Kentucky College of Dentistry, Lexington, Ky., 1968, pp. 89-97.
- (11) National Center for Health Statistics, Public Health Service: Decayed, missing, and filled teeth among children, United States. PHS Publication No. 1000, Ser. 11, No. 106. U.S. Government Printing Office, Washington, D.C., 1971.

HEISE, A. L. (University of Kentucky College of Dentistry), MULLINS, M. R., HILL, CLEM J., and CRAWFORD, JEAN H.: Meeting the dental treatment needs of indigent rural children: One dental school's attempt. *Health Services Reports, Vol. 88, August-September 1973, pp. 591-600.*

The University of Kentucky College of Dentistry has completed a 5-year program of incremental dental care for school children from a rural county in an economically depressed area of Appalachia. To measure the extent to which dental student manpower could be used to reduce unmet dental treatment needs in such a population, baseline and followup examinations were conducted on all elementary school children in the county. Baseline examinations indicated that the dental caries attack was high and dental care almost nonexistent.

During the project period

approximately 9 of 10 elementary school children in the county received at least initial treatment. Although recall treatment was offered to all previous patients each year, continuous participation was low. The results of the followup examinations of the entire elementary school population in the county indicated that the level of dental care (F/DMF and f/def) had increased threefold in the permanent teeth and eightfold in the primary teeth. The proportion of extracted permanent teeth (M/DMF) had been reduced by 53 percent. The prevalence of untreated dental

caries had been reduced by 57 percent.

The results for those children 6-11 years of age were compared with results reported from the National Health Survey. Children in Wolfe County in 1967 were receiving only a fraction of the dental care received by other children in the United States, but by 1971 the Wolfe County children were recipients of a somewhat higher level of dental care (F/DMF and f/def). Nevertheless, the average child in Wolfe County in 1971 still had more untreated dental caries (D + d) than the average child in the United States (2.7 versus 1.9).