

San Elizario, Texas
Oral Health Of Children
And Teenagers
Report Of A Pathfinder Planning
Survey In A U.S.-Mexico
Border Colonia
To San Elizario Independent
School District,
And Thomason Memorial
Hospital, El Paso TX.

Department of Community Dentistry
University of Texas Health Science
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San Antonio, Texas
1989

San Elizario Oral Health of Children and Teenagers

One hundred eighty eight (188) children aged 4 - 5, 7 - 9, and 11- 13 were examined in February 1988. Urgent treatment was provided to 38. In May 1988 all of the older age group were provided with appropriate oral health education, prevention and treatment.

Decay rates in primary teeth in San Elizario are similar to those for children in the South West generally. In permanent teeth the decay rates are 50% higher.

Water from shallow wells is very high in total dissolved solids. (Water and Waste Water Management Plan, El Paso County, 1987). This unsafe water happens to be naturally fluoridated (0.7 - 1.2 ppm F).

Only 22% of children are decay free. There is a backlog of treatment-need two to three times that found generally in the South Western U.S. The number of fillings required per child averages 2-3 and most are of one surface and simple in type.

Sealants have the potential to prevent about half of the total decay these children have experienced.

Gingival bleeding (gum disease) becomes more prevalent with age, affecting 41% of 11-13 year olds. Twenty-three percent of this age group need scaling to remove calculus (tartar) which is also implicated in gingivitis and periodontal (gum) pocketing.

The health resources of San Elizario, like those of many border communities, are meagre - 1 school nurse, a weekly visit by a pediatric medical resident, a county immunization program and intermittent visits by a dental van plus the communities own organizational resources. Oral health promotion and treatment requirements are attainable with quite modest resources, which do not presently exist. Simple physical facilities, the clinical services of a dentist and dental hygienist, plus an oral health educational component in school are indicated and if creatively applied would have a cost effective impact on oral health in San Elizario.

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San Elizario Project
Results of oral exams for children conducted February 1988

	<u>Age 4 & 5</u>	<u>Age 7, 8 & 9</u>	<u>Age 11, 12, & 13</u>
Numbers	50	76	61
<u>Caries</u>			
Urgent care needed	30%	22%	13%
% Caries free i.e. dfs & DMFS=O	28	20	21
<u>Primary Teeth</u>			
dfs	4.6	--	--
dfs	4.6 (5.2)	5.2 (6.0)	--
d/dfs	0.65 (0.47)	0.42 (0.39)	--
proportion of ds occlusal	0.34	0.50	--
proportion of dfs occlusal	0.38	0.43	--
proportion of ds recurrent	0.01	0.10	
<u>Permanent Teeth</u>			
DMFS	--	1.5 (1.0)	4.7 (3.2)
DS		0.24	1.25
MS		0.07	0.25
FS		1.16	3.16
D/DFS	--	0.17 (.30)	0.28 (0.20)
proportion of Ds occlusal	--	0.6	0.47
proportion of DFs occlusal	--	0.68	0.51
proportion of Ds recurrent	--	0.3	0.01
mean occlusal surface sealed		1.0	2.7

() = NIDR Region V 1979-80

Gingivitis

% with bleeding at ≥ 1 gingival site, of 6 assessed	28	43	41
% with 1 site	16	13	28
2 sites	6	13	10
3 sites	6	5	3
4 sites	-	1	-
5 sites	-	1	-
6 sites	-	-	-
% with Calculus	0	10	23

Other

% with dental trauma	0	7	8
% with malocclusion	16	50	57
% with fluorosis			
Very mild	18	29	25
mild	4	12	18
moderate	0	4	7

Water Fluoride Analysis

Fourteen samples of water were collected including water known to be from wells and water being used for drinking and cooking whatever its source. It appears that some households bring containers of El Paso water for drinking and cooking. (0.7-0.8 ppm F⁻). Others appear to use well water (0.8 - 1.2 ppm F). Either way fluoridated water is being used. The problem then is not with the fluoride levels, which are optimal or slightly above, but with well water which exceeds state standards for total dissolved solids, nitrates and coliform bacteria.

	N	<u>Range of ppm F</u>	
		Well	Drinking
Colonia de Nessenia	5	0.8	0.7 - 1.2
Colonia de Cerealia	2	--	0.7 - 1.1
Colonia de las Dalias	2	--	0.7
Colonia Salado	5	1.1 - 1.2	0.8 - 0.9

(Optimal F level is 0.8 ppm F⁻)

Streptococcus mutans testing.

Appearance of this batch of MSB plates is like M-S agar with no enhancements or inhibitors. There has been no suppression of any growth and most plates have severe overgrowth of normal flora to the point of swarming completely over the tongue blade area. The enormous numbers of non-mutans would in themselves inhibit the growth of mutans by simple competition for nutrients. Trying to see the mutans which have raised up out of this "mass" is at most a guess. No conclusions of a patients status could be made based on these plates and these "guess values" should not be included in any scientific or clinical documentation for these patients.

Approximately 10% of the plates were also contaminated with environmental growth around the perimeter of the plates before use. A complete perimeter of growth was seen on those non-used plates returned with the samples.

Unfortunately, the media as prepared was not suitable. It may be possible to redo these tests in the classroom in May 1988.

INITIAL CONCLUSIONS

Dental Caries levels are approximately at the levels reported for the southwest (Region V) by NIDR in 1979-80. However the preventive impact of sealants, especially those placed in the older children, must be considered.

Primary Teeth

Twenty eight percent of the 4 and 5 year old children in the Headstart Program have no decay. The average number of decayed, missing and filled primary tooth surfaces (defs) is 4.6 with 65% of the decay untreated (d/dfs). One third of this decay is on occlusal surfaces and potentially preventable by sealants. Regular use of fluoride tooth paste would help prevent the rest.

Twenty percent of the 7, 8 and 9 year old children had no decay. The average number of decayed, and filled primary teeth is 5.2 with 42% of the decay untreated. Half of this decay is on occlusal surfaces and potentially preventable by sealants. The rest would be helped by fluoride toothpastes and a school-based fluoride rinse program.

Permanent Teeth

The average number of decayed, missing and filled permanent tooth surface (DMFS) in 7, 8 and 9 year olds is 1.5, with 17% of this decay untreated (D/DFS). Two thirds of this decay is on occlusal surfaces and potentially preventable by sealants. Each child already has an average of one sealed molar, of four erupted at this age.

The average number of DMFS at 11, 12, and 13 year olds was 4.7, with 47% of this decay untreated (D/DFS). Half is occlusal decay. Each child has an average 2.7 surfaces sealed with a range of 4 to 12 occlusal surfaces available at this age, for sealing. Fluoride tooth pastes and school-based fluoride rinse programs would reduce the remaining decay.

Gingivitis

This was present in 28% to 43% of each age group, affecting two or more of the six tooth sites assessed in each child in 12% to 20% of children. Prevalence of gingivitis rose with age, as did occurrence of calculus (tartar). All children would benefit from oral hygiene instruction (toothbrushing) with particular need apparent in the older age group. Scaling to remove calculus is also strongly indicated in 7, 8 and 9 year olds and 11, 12 and 13 year olds.

PREVENTION - RECOMMENDATIONS

Sealants, scaling and toothbrushing instruction as described above can be provided by dental hygienists. The benefit of three prior dental van visits to place sealants is quite apparent. Priority should be given to sealing permanent molars at age 7 and 13, primary molars at age 3, as well as to scaling after age 6 and toothbrushing instructions for all children. Use of fluoride tooth pastes should be emphasized and a school fluoride rinse program begun for elementary school and above. Dietary modification to reduce sugar intake and frequency is also desirable, but difficult to attain.

Dental trauma is not a major feature. Malocclusion affected half the children, but top priority of treatment would not be given to the majority of these.

The distribution of fluorosis is that which is expected for a community drinking water with fluoride levels slightly above optimal. Also, no account is taken of other places of residence.

TREATMENT OF DENTAL CARIES - NEED

Twenty one percent of children had urgent need for treatment, usually for pain, or infection associated with deep cavities. A third of the younger children were included. This reflects the lack of treatment and prevention in this Headstart group compared with the older children. The latter have benefitted from sealants placed at two visits of the City/County dental van, and one by the State van. This is a measure of the benefit and success of such sealant programs, especially in fluoridated communities.

Urgent treatment was provided on site in San Elizario in Feb 1988 and subsequently by Thomason Memorial Hospital Dental Clinic.

The mean number of tooth surfaces requiring fillings is as follows:

	Primary Teeth	Permanent Teeth	Total
Age 4 & 5	3.0	--	3.0
Age 7, 8 & 9	2.2	0.3	2.5
Age 11, 12 & 13	--	1.3	1.3

The potential impact of sealants is to reduce the treatment requirements for occlusal decay by 70% over 5 years. Fluoride toothpaste and school based rinses can reduce the balance of the decay by about an additional third.

The ultimate effect of sealant and these fluorides on the mean number of decayed, missing and filled both surfaces can be projected as follows:

Tooth Surfaces with decay experience

	Primary Tooth Surface <u>surface</u> <u>dfs</u>		Permanent Tooth Surface <u>surface</u> <u>DMFS</u>		Total Tooth Surface <u>DMFS + dfs</u>
age 4 & 5	occlusal	0.5	--		
	other	<u>2.1</u>			
		2.6 cf 4.6			2.6 cf 4.6
age 7, 8 & 9	occlusal	0.8	occlusal	0.3	
	other	<u>1.7</u>	other	<u>0.4</u>	
		2.5 cf 5.2		0.7 cf 1.5	3.2 cf 6.7
age 11, 12 & 13	--		occlusal	0.7	
			other	<u>1.5</u>	
				2.2 cf 4.7	2.2 cf 4.7

This would be a 50% preventive reduction in decay, in addition to that already gained from the existing use of fluoridated water and sealants. The above projections represents a mean annual increment in caries of less than one surface in primary teeth of preschoolers and less than half a surface of permanent teeth in older children.

Radiographs (x rays) are not included in the above analysis.

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NEED FOR DENTAL TREATMENT

SAN ELIZARIO

THE REGION

AGE	NUMBER	URGENT NEED	TOTAL NEED	TOTAL NEED	
4 - 5	50	30%	60%	32%	Headstart, Central Tx Fluoridated(1)
7,8,9	77	22%	62%	21%	S.W. Region(2)
11,12,13	61	13%	28%	47%	Hispanic Teens(3) Texas

(1) Parker & Fultz JADA 113:658,1986.

(2) National Dental Caries Prevalence Survey NIDR-NIH 1979-80 US Dept
H & HS.

(3) Brown, Killian, Kapadia J. Dent. Res. 66:163, 1987.

CARIES (DECAY) EXPERIENCE IN SAN ELIZARIO

Only 22% of children are decay free.

In primary (baby) teeth the caries scores are similar to the regional averages.

In permanent teeth the caries scores are 50% higher than regional averages.

	<u>Age 4 & 5</u>	<u>7,8 & 9</u>	<u>11,12 & 13</u>
Average no. of tooth surfaces to be filled			
Primary Teeth	3.0	2.2	-
Permanent Teeth	-	0.3	1.3
Total	<u>3.0</u>	<u>2.5</u>	<u>1.3</u>

GINGIVITIS (GUM DISEASE) IN SAN ELIZARIO

	<u>AGE 4 & 5</u>	<u>7, 8 & 9</u>	<u>11, 12 & 13</u>
% with gingival bleeding	28	43	41
% with calculus (tartar)	0	10	23

ORAL PREVENTION & TREATMENT FOR CHILDREN & TEENAGERS IN SAN ELIZARIO

	<u>WHAT</u>	<u>WHO</u>	<u>WHERE</u>
1. <u>Annual Exam</u>		Dentist	School
2. <u>Caries</u>	Sealants	Hygienist	School
	Brush + Fluoride Toothpaste	Self	Home + School Instructions
	Simple fillings (if needed)	Dentist	Dental Office/ Clinic/School
3. <u>Gingivitis</u>	Brush + Floss	Self	Home + School Instructions
	Scaling (if needed)	Hygienist	School

- Target High Risk Groups for Prevention
- Harness Existing Community Organization
- Relate Closely to Other Aspects of Health Promotion, Disease Prevention & Treatment (Nutrition, Infection Control, etc.)

SEALANTS FOR CARIES PREVENTION, SAN ELIZARIO

25 -30% of permanent molars are already sealed.
(City & Co. + State Dental Van Program.)

40% of decay in primary teeth could be prevented
with sealants.

60% of decay in permanent teeth could be prevented
with sealants

PUBLIC DENTAL HEALTH MILESTONES

- 1791 New York City Clinic for Treatment of the indigent.
- 1890 School Dental Services initiated
- 1919 Dental Dept. of U.S. Public Health Service
- 1933-35 Federal Emergency Relief Administration Clinics; Social Security Act.
- 1966 Great Society Programs - Medicare, Medicaid
- 1986 Texas Legislature passes first indigent health care bill.
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- 1988 San Elizario and many border communities without basic health resources.