Prevalence of dental caries in USAF family members age 3–15

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Abstract

This study was undertaken to determine the caries prevalence and restorative needs of United States Air Force (USAF) family members ages 3–15. Examinations were performed on 1802 USAF children at five bases. Indexes recorded were: Decayed, Missing, Filled Surfaces (DMFS) for permanent teeth; decayed, filled surfaces (dfs) for primary teeth; and a Dental Restorative Treatment Need Index. Results indicate an increase in the dfs and DMFS index with age, with more caries present in young children located overseas. No significant differences between children of officers and enlisted members were found. A higher dfs and DMFS index was found in other racial families as compared to blacks or whites. This study's overall population sample had a higher dfs index but lower DMFS index than the 1986-87 NIDR survey showed.

Introduction

Dental caries is one of the most prevalent diseases affecting children. The treatment and prevention of caries is important to those concerned with children's dental health. Both the prevalence and location of carious lesions are important to the dentist who assesses the success of preventive measures as they pertain to large population groups. Also of interest is how specific demographic factors such as sex, race, and socioeconomic status affect the caries rate in children.

The prevalence and changing trends of dental caries in children have been investigated in various populations in the United States. One of the first national studies on the prevalence of dental caries showed a Decayed, Missing, Filled Teeth (DMFT) score of 15.0 in 13 year olds (Day and Sedwick 1935). A 1979–80 survey by the National Institute of Dental Research (NIDR 1981) on the prevalence of dental caries in U. S. schoolchildren found a significant decrease in caries activity with a DMFS score of 5.41 for 13 year olds. The 1986–87 survey showed a drop to 3.76.

Many studies on caries prevalence were done during the 1930s and 1940s. However, in the last 15 years few studies have been done in the United States. These recent investigations include a comparison of dental caries in schoolchildren from 1961–80 by Brunelle and Carlos (1982) and a review of the current status of dental caries in children by Hicks et al. (1985). There have been several statewide studies, including a study of Massachusetts schoolchildren from 1979–81 by DePaola et al. (1982), Indiana schoolchildren from 1981-82 by Sergent et al. (1983), and North Carolina children in 1976-77 by Rozier et al. (1981). A survey of secular changes in two Massachusetts towns from 1958–78 also was done by Glass (1981). Results from these studies indicate nearly a 50% caries reduction in teenage children from rates shown in previous studies.

Results reported by previous studies include:

1. A 50% caries decline in children ages 5–17 in the past 20 years, with an average DMFS index of 4.77
2. An increase in the number of caries-free children
3. A positive correlation of the DMFS index with age
4. A change in the caries pattern — more reduction in caries affecting interproximal surfaces than in pit and fissure surfaces
5. An inverse caries relationship to socioeconomic status
6. A lower DMFS Index in urban areas than in rural areas
7. A slightly higher DMFS Index in females than in males.

Bagramian and Russell (1971) reported that blacks have more caries than whites, while Rozier et al. (1981)

1979–80 survey conducted by the NIDR (1981) indicated that blacks have fewer caries than whites.

Up to this date no study has been published on the dental health of military children. The purpose of this study was to determine the caries prevalence and dental treatment needs of United States Air Force (USAF) family members ages 3–15, and the effect of demographic factors such as race, officer vs. enlisted status, and stateside vs overseas locations. The results of the USAF survey then would be compared to the results of the NIDR survey, and serve as a baseline for future studies.

Methods and Materials

Eighteen hundred and two (1802) Air Force military family members ages 3–15 who presented for routine dental examinations at Air Force dental clinics from July 1986 through January 1987 were selected randomly for participation in the study. Examinations were accomplished by five pediatric dentists with a standard dental mouth mirror and a #23 dental explorer. Bite-wing radiographs were taken on patients with posterior teeth in contact. The indexes recorded in this survey were the dfs (decayed, filled surfaces) for primary teeth, and the DMFS (Decayed, Missing, Filled Surfaces) for permanent teeth. Another index, the Dental Restorative Treatment Need Index (DRTNI), also was recorded (NIDR 1979). This index indicates what dental treatment is required for each tooth based on the subjective determination of the examiner. This includes the need for restorations, pulpal therapy, extractions, space maintainers, and sealants.

Demographic data included age, sex, location of base, officer or enlisted status, and the mother's and father's race. The data was recorded on a standardized computer data collection form specifically designed for caries epidemiology surveys. The completed forms then were reviewed for completeness at the examining base and forwarded to Keesler Air Force Base (AFB), Mississippi for analysis.

Five USAF military bases were selected to participate in this study. Three bases were located in different parts of the continental United States (CONUS): those being Keesler AFB, Mississippi; Scott AFB, Illinois; and Lackland AFB, Texas. Two bases were located in Japan: Yokota and Misawa AFB.

Diagnostic criteria for clinical detection of caries was that which was set forth by the 1968 Caries Measurement Task Group at the Conference on Clinical Testing of Cariostatic Agents, sponsored by the American Dental Association (NIDR 1979). Radiographic criteria was that outlined at the 1981 Conference on Radiation Exposure in Pediatric Dentistry (Nowak et al. 1981).

All examiners were calibrated through written handouts, verbal discussions, a slide series illustrating the diagnostic criteria, and clinical examinations of selected children. This was accomplished with all examiners at one location prior to initiation of the study. All raters examined the same patients.

The analysis of variance (ANOVA) statistical test was used to compare significant differences between subgroups of race, officers vs. enlisted status, and age among the bases. Post-hoc comparisons were made using the Neuman-Keuls test. The two-tailed *t*-test was used for comparison of the bases and age groups. All significance levels used were set at $P < .05$.

Results

The data from 1802 USAF family members ages 3–15 examined during this survey were used in this study. No child failed to have necessary radiographs taken. The percentage of rater agreement with the principal investigator was 96% based on clinical application of the caries diagnostic criteria to individual tooth surfaces.

Comparisons were made between the various age groups, various bases, officers vs. enlisted status, overseas vs. stateside bases, and the ethnic background of the parents.

dfs/DMFS

The average number of dfs per child for all ages in all areas combined was 3.57, while the mean dfs for those ages 5–9 was 4.35. The average DMFS for all ages in all areas combined was 1.65. Seven hundred children had dfs and DMFS indexes of zero. Table 1 lists the dfs, DMFS index, and the number of patients located at each base.

Significant differences in the dfs index were found between Yokota and Misawa when compared to all other bases. For the DMFS score, only Yokota was

Table 1. Mean dfs/DMFS for USAF Family Members Age 3-15

Base	*Number of Patients*	*Mean dfs (SD)*	*Mean DFMS (SD)*
CONUS			
Keesler AFB,MS (K)	390	2.26 (4.34)	2.08 (3.39)
Lackland AFB, TX (L)	385	2.63 (4.43)	1.38 (3.06)
Scott AFB, IL (S)	357	2.97 (5.42)	1.86 (3.41)
	CONUS Overall	2.63 (4.76)	1.76 (3.29)
Overseas			
Misawa AFB, Japan (M)	398	4.53 (7.70)	1.65 (3.06)
Yokota AFB, Japan (Y)	272	5.53 (10.05)	1.03 (1.99)
	Overseas Overall	4.95 (8.77)	1.43 (2.75)
	Overall	3.57 (6.78)	1.65 (3.12)

statistically significant when compared to all other bases.

Table 2 lists the mean dfs/DMFS for each age group combining all bases. The dfs index showed a general pattern of increase with age.

ANOVA between the bases for the various age groups showed significant differences in the following comparisons:

3-year-olds	Yokota – Keesler
4-year-olds	Yokota – Lackland, Yokota – Scott
5-year-olds	Yokota – Keelser, Yokota – Lackland, Yokota – Scott

All differences occurred between Yokota and the stateside bases. There were no differences between locations for the DMFS index.

TABLE 2. Mean dfs/DMFS USAF Family Members Age 3-15

Age	*Number of Children*	*Mean dfs (SD)*	*Mean DFMS (SD)*
3	168	2.17 (6.02)	–
4	164	3.31 (7.53)	–
5	196	4.33 (7.11)	0.00
6	188	4.10 (7.85)	0.81 (0.42)
7	144	4.41 (7.17)	0.37 (0.91)
8	154	3.97 (5.60)	0.84 (2.01)
9	159	4.99 (7.97)	1.04 (1.64)
10	137	3.39 (5.57)	1.26 (1.74)
11	129	3.24 (4.61)	1.69 (2.29)
12	109	1.24 (1.82)	2.24 (2.80)
13	87	2.47 (2.30)	3.18 (4.24)
14	98	4.80 (3.11)	4.58 (4.33)
15	69	0.53 (0.71)	6.28 (6.25)

dfs/DMFS CONUS vs. Overseas

When comparing the CONUS bases (Keesler, Lackland, Scott) vs. overseas (Misawa and Yokota), the following results were obtained (see Table 1). The CONUS mean dfs was 2.63, and overseas was 4.95 ($P < .001$). When comparing CONUS vs. overseas at the various ages, significant differences were found in 3, 4, 5, and 8-year-olds.

The CONUS mean DMFS was 1.76, and overseas was 1.43 ($P = .06$). When comparing CONUS vs. overseas at the various ages, significant differences were found in the 6 and 12-year-olds ($P < .05$).

Table 3 shows the average ages of patients for the dfs and DMFS indexes by base, overseas vs. CONUS, and overall. Yokota had a significantly younger age distribution compared to all other bases for the dfs index ($P < .01$). Both Yokota and Misawa had significantly younger age distributions compared to all other bases at the $P < 0.01$ level for the DMFS index. Significant differences in age distributions for both the dfs and DMFS indexes were found when comparing the overseas and stateside population samples ($P < .01$).

TABLE 3. Average Age of Patients for dfs/DMFS Index by Location

Base	*Mean Age (SD) dfs*	*Mean Age (SD) DMFS*
CONUS		
Keesler AFB, MS	6.91 (2.65)	10.07 (2.87)
Lackland AFB, TX	7.15 (2.62)	10.02 2.81
Scott AFB, IL	6.96 (2.83)	10.15 (2.76)
CONUS Overall	7.00* (2.70)	10.08** (2.81)
Overseas		
Misawa AFB, Japan	7.28 (2.61)	9.30*** (2.46)
Yokota AFB, Japan	5.64 (2.25)	8.83*** (2.84)
Overseas Overall	6.62* (2.60)	9.14** (2.60)
Overall	6.85 (2.66)	9.76 (2.78)

*Mean age (dfs) conus overall vs. mean age (dfs) overseas overall; *t*-test, $P < .01$
**Mean age (DMFS) conus overall vs. mean age (DMFS) overseas overall; *t*-test, $P < .01$
***Mean age (DMFS) Misawa vs. Yokota; *t*-test, $P < .01$

TABLE 4. Mean dfs Officers vs. Enlisted by Location

Base	*No.*	*Officer (SD)*	*No.*	*Enlisted (SD)*
CONUS				
Keesler AFB, MS	38	2.32 (4.60)	261	3.01 (5.15)
Lackland AFB, TX	38	1.90 (3.11)	247	2.78 (4.58)
Scott AFB, IL	102	3.32 (6.21)	177	2.89 (5.08)
CONUS Overall	178	2.80 (5.37)	685	2.90** (4.93)
Overseas				
Misawa AFB, Japan	66	2.64* (5.62)	252	4.82* (7.70)
Yokota AFB, Japan	34	4.53 (9.79)	182	5.79 (10.23)
Overseas Overall	100	3.28** (7.31)	434	5.21 (8.85)
Overall	278	2.98 (6.13)	1119	3.80 (6.82)

* dfs Officer vs. Enlisted at Misawa; *t*-test, $P < .05$
** dfs conus Enlisted vs. overseas Officers; *t*-test, $P < .05$

The data for ages 3–15 were combined for each location when comparing officer vs. enlisted and ethnic factors. The number of patients in these subcategories was too small for comparison by age groups. Although the age distribution was similar for the stateside bases, it was not similar at the overseas locations. Care must be taken when interpreting the averages for the overseas areas.

Officer vs. Enlisted

The data for comparison of the dfs for officers and enlisted family members is shown in Table 4. Significant

Table 5. Mean DMFS Officers vs. Enlisted by Location

Base	*No.*	*Officer (SD)*	*No.*	*Enlisted (SD)*
CONUS				
Keesler AFB, MS	39	1.67 (2.88)	246	2.14 (3.46)
Lackland AFB, TX	48	1.38 (3.00)	261	1.33 (3.03)
Scott AFB, IL	81	2.10 (3.62)	163	1.77 (3.23)
Conus Overall	168	1.79 (3.29)	670	1.74 (3.26)
Overseas				
Misawa AFB, Japan	56	1.57 (3.46)	233	1.83 (2.93)
Yokota AFB, Japan	10	0.70 (1.16)	118	1.09 (2.09)
Overseas Overall	66	1.44 (3.22)	351	1.58 (2.70)
Overall	234	1.69 (3.27)	1021	1.68 (3.08)

differences between the officers and enlisted were found only at Misawa AFB, Japan. The total officer mean dfs was 2.98, and the total mean dfs for enlisted was 3.80 (P = .06). ANOVA showed only a significant difference between the total enlisted overseas and the total officers CONUS.

Table 5 shows the mean DMFS for officer vs. enlisted

Table 6. Mean dfs for Races Across Bases

Base	*No.*	*dfs Caucasian (SD)*	*No.*	*dfs Black (SD)*	*No.*	*dfs Other (SD)*
CONUS						
Keesler AFB, MS	223	3.04 (5.10)	37	2.03 (4.34)	39	3.10 (5.65)
Lackland AFB, TX	175	2.32 (3.92)	35	2.23 (3.74)	72	3.64 (5.65)
Scott AFB, IL	234	3.29 (5.81)	23	1.65 (3.63)	20	2.10 (3.35)
CONUS Overall	632	2.93 (5.10)	95	2.01*[4] (3.92)	131	3.24*[5] (5.36)
Overseas						
Misawa AFB, Japan	208	3.26* (6.82)	43	3.42* (4.14)	83	7.71*,*[3] (8.27)
Yokota AFB, Japan	108	2.19 (4.12)	42	7.26*,*[1] (10.69)	57	10.57*,*[2] (14.26)
Overseas Overall	316	2.90 (6.05)	85	5.32*,*[4] (8.25)	140	8.95*[5] (11.30)
Overall	948	2.92 (5.43)	180	3.57 (6.54)	271	6.25* (9.42)

* Misawa Other different from Caucasian and Black; ANOVA, $P<.01$
** Yokota Black vs. Caucasian; ANOVA, $P<.01$
Yokota Other vs Caucasian; ANOVA, $P<.01$.
*[1] Yokota Blacks vs. all other Blacks; ANOVA, $P<.05$
*[2] Yokota Other vs. Keesler, Lackland, Scott Other; ANOVA, $P<.05$
*[3] Misawa Other vs. Scott Other; ANOVA, $P<.05$
*[4] Black conus vs. Black overseas; t-test, $P<.01$
*[5] Other conus vs. Other overseas; t-test, $P<.01$

Table 7. Mean DMFS for Races Across Bases

Base	*No.*	*DMFS Caucasian (SD)*	*No.*	*DMFS Black (SD)*	*No.*	*DMFS Other (SD)*
CONUS						
Keesler AFB, MS	202	2.28 (3.57)	43	1.84 (3.02)	40	1.50 (2.82)
Lackland AFB, TX	150	1.43 (3.25)	46	1.00 (2.32)	84	1.81 (3.32)
Scott AFB, IL	202	1.53 (2.86)	24	1.96 (2.97)	30	3.90 (5.76)
CONUS Overall	554	1.78*** (3.26)	113	1.52 (2.75)	154	2.14 (3.88)
Overseas						
Misawa AFB, Japan	204	1.22* (2.52)	38	2.42* (3.23)	83	1.78 (3.55)
Yokota AFB, Japan	56	0.75** (1.31)	36	1.14** (2.73)	38	1.50** (2.08)
Overseas Overall	260	1.12*** (2.32)	74	1.80 (3.04)	121	1.69 (3.16)
Overall	814	1.57 (3.00)	187	1.63 (2.87)	275	1.94 (3.58)

* Misawa Caucasian vs. Blacks; ANOVA, $p<.05$
** Yokota Other vs. Black and Caucasians; ANOVA, $p<.05$
*** Caucasians conus vs. Caucasians overseas; t-test, $p<.05$

by bases. No significant differences were found between officer and enlisted between the bases or when comparing overseas vs. CONUS.

Ethnic Origin

dfs — The data for comparison of the ethnic origin by bases for the dfs index is shown in Table 6 (previous page). Three categories were used: if both parents were Caucasian, then *C* is the indicator; if both parents were Black, then *B* is the indicator; and if each parent was of different ethnic origin, *O* is the indicator. The Other group also included those of Oriental and Hispanic origin whose numbers were not large enough to include in a separate category.

The ANOVA showed significant differences at Yokota between C–B, and C–O, and at Misawa between C–O and B–O ($P < .01$). Among all bases, ANOVA showed no differences among the Caucasians. Within the Black group, Yokota was statistically significant as compared to all other bases ($P < .05$). Within the Other group, significant differences were seen between Yokota–Keesler, Yokota–Lackland, Yokota–Scott, and Misawa–Scott ($P < .05$).

The overall dfs index showed significant differences when comparing Blacks and the Other group overseas to CONUS ($P < .05$). There also was a significant difference when comparing the Other group overall to Caucasians and Blacks ($P < .01$).

DMFS — Table 7 (previous page) shows the mean DMFS scores for races across the bases. The ANOVA showed significant differences at Misawa between the C–B and at Yokota between the B–O and C–O ($P < .05$). It showed no differences overall among the races.

When comparing overseas and CONUS bases, the DMFS index for Caucasians was significantly greater for CONUS compared to overseas ($P < .05$). The Other group also was greater but was not statistically significant. The Blacks had a lower DMFS CONUS.

Comparison of the percentage of patients by race and base revealed that Yokota, Lackland, and Misawa showed the largest Other groups.

Dental Restorative Treatment Need Index — Treatment needs according to the DRTNI are listed in Table 8. Table 9 compares the average restorative needs per patient (categories 1–4 and 7) with the sum of the dfs and DMFS indexes by base and CONUS vs. overseas. This was done to determine if the high dfs and DMFS index scores were due to caries (the d portion of the index) or restorations already present (the f portion of the index). A general trend is present in that the bases with the lower combined dfs/DMFS index had lower caries rates. Higher caries rates were present in overseas populations than compared to CONUS.

Discussion

One purpose of this survey was to compare the dental health of USAF family members ages 3–15 to the general population of children in the United States. In 1979–80 and 1986–87, the NIDR conducted national surveys on the caries prevalence of United States schoolchildren (Brunelle and Carlos 1981; NIDR 1981; NIDR unpublished). The results indicated a significant decrease in caries. Basically, this survey was modeled on the NIDR survey and included the use of the same caries diagnostic criteria, calibration of examiners, data collec-

Table 8. Dental Restorative Treatment Need Index by Base

Treatment	*Keesler*	*Lackland*	*Misawa*	*Scott*	*Yokota*	*Total*
One surface restoration	160	128	214	161	75	738
Two surface restoration (or 2 one surface)	140	83	205	90	114	632
Three surface restoration (or 3 one surface, or two surface + one surface)	23	3	11	4	51	92
More than three surface (not a crown)	13	1	1	12	4	31
Extraction of a primary tooth	29	3	45	4	7	88
Extraction of a permanent tooth	3	1	0	0	0	4
Crown, either primary or permanent	27	43	55	16	74	215
Replacement of a permanent tooth	0	1	2	0	0	3
Root canal or other pulpal therapy	9	4	2	10	3	28
Space maintenance for missing primary tooth	1	5	73	1	16	96
Sealant needed on primary or permanent tooth	600	1531	654	132	434	3351

tion form, and DRTNI. Also, it included children 3 and 4 years old.

In determining the dfs index in the NIDR surveys, only ages 5–9 were included. The overall mean dfs for this group was 3.90 (NIDR unpublished), compared to a mean dfs of 4.35 for ages 5–9 in our survey. Both studies show an increase in mean dfs with age, up to age 8 or 9, then a decrease due to exfoliation of the primary teeth. The children in the Air Force study had a larger dfs index than the general population of the United States.

When we compared the dfs index CONUS and overseas, it became clear that the dfs index overseas was far greater than that found in the NIDR study, while the CONUS dfs index was far less. Examination of the distribution of ages showed that the overseas bases had a significantly younger age distribution, which would affect the dfs index more than the DMFS index.

This raises the question of whether the greater dfs index overseas is due to an increase in the prevalence of caries, or to restorations already present. The data from the DRTNI (Table 9) shows that more decay was present in the overseas population than for those family members located in CONUS.

Attempts to compare caries rates in younger children, ages 2–3, with studies done by Wisan et al. (1957) and Hennon et al. (1969) were not feasible due to their use of a different index: decayed, extracted, filled surfaces (defs).

In comparing the DMFS score of the USAF survey, 1.65, to the NIDR survey of 3.10 (NIDR unpublished), a much lower index appears to be present in the military family members. The DMFS index was greater but not statistically significant ($P = .06$), when comparing overseas and CONUS in the USAF study. For several reasons, both indexes are not greater as compared to the NIDR survey.

First, we considered that most USAF base water supplies are fluoridated. This would have a greater effect on the permanent dentition and therefore, explains the lower DMFS index as compared to the general population of the United States.

Table 9. Comparison of Restorations Needed vs. Sum of dfs + DMFS by Base

Base	*Sum of 1-4,7 codes per Patient*	*Sum of dfs + DMFS*
CONUS		
Keesler	.93	4.34
Lackland	.67	4.01
Scott	.79	4.83
CONUS Overall	.80	4.39
Overseas		
Misawa	1.22	6.18
Yokota	1.17	6.38
Overseas Overall	1.19	6.38

Also, different age groups were included, 5–17 for the NIDR surveys, and 3–15 for the USAF survey. Had the USAF survey included children ages 16–17, the mean DMFS probably would have been higher, since the index increases with age. It should be noted, however, that the DMFS index was lower at all ages as compared to the NIDR surveys.

When comparing the overall results of the USAF survey to the NIDR surveys, several other major differences are apparent. In the NIDR surveys examinations were done in schools, while this survey examined patients seeking dental examinations at USAF dental clinics. Therefore, the patients used in this study may have had a greater dental awareness, which could increase the dfs and DMFS indexes.

Unlike the USAF survey, the NIDR surveys did not use dental radiographs for caries diagnosis. This lack of additional diagnostic information could have resulted in a more conservative estimate of caries than is actually present.

When evaluating the officer vs. enlisted status and ethnic variables on the dfs and DMFS index, one must remember that this study compared the averages for each variable and combined ages 3–15. This was necessary to allow comparisons between small subgroups. No problems arise from this if you assume that the random selection allowed for an equal distribution of all ages in all subgroups. This equal distribution then would eliminate the influence of the rising dfs and DMFS indexes with age on the total average.

When the officer and enlisted family members' mean dfs and DMFS was compared, statistical significance was noted only at Misawa AFB. The values were nearly equal or greater for the enlisted at all locations, except at Scott AFB. The enlisted overall value, while greater than the officers', was not significant.

A socioeconomic difference generally exists between officer and enlisted personnel in the military. Officers are required to be college graduates, and they also have a higher income. Despite the socioeconomic differences between the two groups, no significant differences were noted in the caries rates. These results differ from results obtained from other studies by Rozier et al. (1981) and Bagramian and Russell (1971), indicating an increase in caries in lower socioeconomic groups. The availability of dental examinations and limited dental treatment at no cost to Air Force family members may explain the similarities in the caries rate between the two groups.

Similar results are obtained when comparing the officer and enlisted caries rates overseas to CONUS. The dfs index, while higher overseas, was not statistically significant. The DMFS index was lower for both officers and enlisted in CONUS. Therefore, no conclusion can be made. This is not surprising, since most Air Force per-

sonnel do not spend extended tours overseas, and there is a continuous change in stateside and overseas personnel. Also, the Air Force provides more dental treatment to family members overseas due to a lack of civilian dental care in some parts of the world.

The results of the influence of ethnic origin on the dfs and DMFS index showed that the Other group had the highest indexes and the Caucasians had the lowest. Statistical significance was found only in the Other group for the dfs index. Although a higher caries rate in the Black group over the Caucasian group concurs with the results of the NIDR surveys, the differences were not statistically significant. This possibly is due to the great diversity of ethnic groups within the socioeconomic structure of the military, combined with the availability of dental care overseas.

What was surprising was the large dfs index found in the Other group overseas. This can be explained partially by the fact that both bases used in this study were located within Japan. However, when one looks at the data from even the CONUS bases, one finds that the Other population consistently had the largest dfs index. This would tend to make one conclude that the young children of Other ethnic origin in the military have a greater need for dental care. This trend did not continue in the DMFS index of the older children.

The DRTNI correlates with the dfs and DMFS scores. Relatively few restorative needs were identified, considering the total number of patients examined. Seven hundred children had dfs and DMFS indexes of zero (39%). Two-thirds of the children in this study needed all the treatment found in the DRTNI. This increased need for restorative care was noted especially in teeth requiring multiple surface restorations, pulpal therapy, extractions, and space maintainers. The need for preventive sealants was high at those bases with a low caries rate.

This study was completed prior to the initiation of the dental insurance program in August, 1987. After that date, family members on the dental insurance program became eligible for preventive and restorative care at civilian dentists. It will be interesting to see what impact this program will have on the dental health of children of military families in the future.

Conclusions

The following conclusions can be obtained from this survey:

1. The mean dfs and DMFS scores increased with age. The mean dfs index was 3.57, and the mean DMFS was 1.65 for all ages 3–15.
2. When compared to the NIDR survey, 1986-87, the USAF survey indicates a higher overall dfs index and a lower DMFS index in military family members ages 3–15 than the general population of U. S. schoolchildren.
3. The dfs index for military family members overseas was greater, while that for the CONUS population was less as compared to the NIDR surveys.
4. The caries rate for young children of military personnel overseas is greater than for those located in CONUS.
5. There is not a significant difference in the caries rate between officers and enlisted family members.
6. While no overall statistical significance was found when comparing ethnic origin, children of the Other group had a statistically significant higher dfs index.
7. The amount of restorative dental treatment required in this population correlates with the mean dfs and DMFS indexes. When the total population of the survey is considered, there are relatively few patients requiring extensive dental treatment.

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Record number of AIDS lawsuits seen

The deadly AIDS virus has spawned more lawsuits than any other single disease in American legal history, according to the first part of a two-part article in the April 11, 1990 issue of the *Journal of the American Medical Association.*

The 469 AIDS-related cases filed in federal, state and municipal courts highlight conflicts in civil liberties, ethics and public health which are likely to emerge as major issues in the future.

"The litigation has an equal impact on cherished constitutional principles of privacy, freedom of speech and association, and liberty," wrote Lawrence O. Gostin, JD, of the Department of Health Policy and Management at the Harvard School of Public Health, Cambridge, MA. "The HIV epidemic even reaches into intimate personal relationships, sparking litigation against sexual partners and family members."

AIDS is now an issue in divorces and child custody and visitation disputes. Intentionally concealing infection from a spouse can be a cause of action, although ignorance of infection so far has been a shield from liability, the author wrote. Intentional concealment aside, courts generally have not found AIDS to be relevant in deciding family law cases. Most courts have reasoned that infection does not automatically make someone a bad parent.

Criminal courts are full of cases with an AIDS component. In serious sexual assault cases, courts increasingly are requiring testing, arguing the victim's right to know outweighs the defendant's right to privacy. But testing suspects upon arrest, before they are charged or convicted may be unconstitutional, Gostin indicated.

To prosecute people infected with AIDS, the threshold question is whether their behavior poses a significant risk of transmission. But intentional transmission is difficult to prove, and Gostin suggested that future prosecutions will be based on charges of reckless endangerment, which don't require proof of specific intent.

In the area of blood supply the question of liability hangs between an industry standard of negligence and strict liability. Blood-shield statutes in most states protect suppliers from strict liability. Suppliers who pass on an infected donation probably will not be held liable for transmission if they complied with established safety standards.

Tracking and controlling the spread of AIDS has spawned suits in a number of areas. By July 1989, 28 states required health professionals to report people with AIDS to their state public health authorities. But those states only account for about one quarter of all domestic AIDS cases. Physicians in other states have filed suits to obtain such requirements.

Gostin suggested that while infection reporting will help because it allows a public health department to target its activities, a parallel system of anonymous testing is needed "to ensure that there are no perceived barriers to access to testing."

The courts have been "highly inconsistent" on the merits of testing or screening for AIDS, except for federal screening programs, Gostin continued. Screening programs at the U.S. State and Defense departments have been upheld in federal courts. Those departments argued their programs were not meant to prevent transmission, "but to ensure that foreign service personnel were not put at risk of contracting opportunistic infections and to uphold America's reputation abroad," the author wrote.