

The effect of oral health care instruction during the 1979 National Dental Health Week on plaque removal by school-children

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SUMMARY

Plaque levels for nursery school, Grade II and Standard IV pupils were recorded prior to the 1979 National Dental Health Week (N.D.H.W.) and at three different consecutive time intervals thereafter. Although there was a significant improvement in oral hygiene at 1, 3 and 6 months after N.D.H.W. 1979, generally, with time a steady decrease in the pupils' performance was noted. This trend was more prevalent amongst the male pupils in the different groups. However, no significant differences were found between the different educational level groups.

OPSOMMING

Die plaakvlak aanwesig by kleuterskool, graad II en standaard IV leerlinge is aangeteken voor die aanvang van die 1979 Nasionale Tandheelkundige Gesondheidsweek en weer op drie agtereenvolgende periodes daarna. Alhoewel daar 'n aansienlike verbetering 1, 3 en 6 maande ná die gesondheidsweek voorgekom het, was daar mettertyd weer 'n geleidelike afname in die plaakbestryding onder die leerlinge. Hierdie afname was meer opmerklik by die seuns van die drie groepe. Daar het egter nie veel verskil tussen die groepe met verskillende geleerdheidsvlakke voorgekom nie.

INTRODUCTION

Since 1974 the Dental Association of South Africa has run a dental health education programme. The aim of this long-term programme is to help the South African public improve their oral hygiene. The programme includes an annual National Dental Health Week (N.D.H.W.) during which dentists and other personnel present dental education talks to teachers and/or pupils.

In order to evaluate the effectiveness of these programmes and to be able continuously to improve them, it is important that they be monitored. In the only study reported thus far (Evian, Weinberg & Cleaton-Jones, 1978) where Standard IV Black, Coloured, Indian and White schoolchildren were studied, it was shown that there was a slight increase in dental knowledge and a statistically significant improvement in oral hygiene 6 months after the second N.D.H.W.

The purpose of the present study was to examine the effects of the 1979 N.D.H.W. on children at various educational levels with a view to helping to plan future preventive programmes.

MATERIALS AND METHODS

The sample consisted of White pupils from two Boksburg nursery schools (aged 4-6 years), Grade II (aged

7-8 years) and Standard IV (aged 11-12 years) middle class White English speaking pupils from a Boksburg primary school.

Prior to the 1979 N.D.H.W., patient hygiene performance (PHP) scores based on that of Podshadley & Haley (1968) were recorded by a single examiner for 55 Grade II and 67 Standard IV pupils. A mirror, probe and disclosing tablets were used to examine the pupils in natural light. This scoring method was modified for primary dentitions and applied to 42 of the nursery school pupils. (The primary molar and incisor teeth were used instead of the permanent molars and incisors.)

A dental practitioner (who had recorded the PHP and modified PHP scores on a previous occasion) presented a talk entitled "Brush, Floss and Fluoride" based on slides from the 1978 and 1979 N.D.H.W. tape and slide series to all the teachers of the schools studied. These two tape and slide series, together with the 1979 N.D.H.W. posters*, East Rand N.D.H.W. Question /Suggested Answer Sheets** and reprints of the 1975 "Teachers Guide for Children's Dental Health*** were

* The Journal of the Dental Association of South Africa (1979) 34, 363.

** A list of 45 typical questions often asked by laymen and children together with suggested answers.

*** Model lessons for use in schools for age groups (6-9 years) and (10-12 years).

issued to the teachers after a discussion which followed the slide presentation.

The PHP and modified PHP scores were again recorded 1, 3 and 6 months after the 1979 N.D.H.W., by the same examiner mentioned above. The nursery school pupils were, however, not reexamined 6 months after the 1979 N.D.H.W. as it would have been extremely difficult to trace some of the pupils who had advanced to primary schools. Inter- and intra-examiner correlations were not carried out as only one examiner was involved in this study and because of the instability of debris in the mouth. Data were analyzed statistically using a two way analysis of variance and a student's paired t test.

RESULTS

The scores of only those children present at all the examinations were used. Thus 22, 8 and 20 pupils from the nursery schools, Grade II and Standard IV classes, respectively, were discarded because they were absent from school.

The PHP and modified PHP scores for the different educational levels which were recorded after N.D.H.W. 1979 were better than those recorded prior to N.D.H.W. 1979. However, with time, there was generally a steady increase in the PHP and modified PHP scores after N.D.H.W. (Table I). The female pupils displayed an improvement in PHP or modified PHP

A two way analysis of variance revealed that there was a significant difference between the pooled PHP and/or modified PHP scores prior to the N.D.H.W. 1979 when compared to the pooled PHP and/or modified PHP scores 1 (p <0,01), 3 (p <0,01) and 6 (p <0,05) months after N.D.H.W. 1979. Comparisons were also made between the PHP and modified PHP score improvement (after 1, 3 and 6 months) of the sex and educational level variables using a two way analysis of variance. No significant differences were found when the latter variable was considered. However, the female pupils displayed a significantly greater improvement in oral hygiene when compared to the male pupils at the 3 and 6 months post N.D.H.W. 1979 time intervals (Table II).

The Student's paired t test revealed that when the mean PHP or modified PHP scores of the female pupils at all the post N.D.H.W. 1979 time intervals were compared with the pre N.D.H.W. 1979 scores, significant differences were found (p <0,01). A significant difference (p <0,01) was only found for the males when the pre N.D.H.W. 1979 score was compared with the one month post N.D.H.W. 1979 score.

DISCUSSION

In a study by Horowitz *et al* (1976) on children aged 10 to 13 years, the PHP scores prior to a supervised daily dental plaque removal programme were reported to be

Table I. Patient hygiene performance scores before and after the 1979 National Dental Health Week.

	Before NDHW 1979			1 month after NDHW 1979			3 months after NDHW 1979			6months after NDHW 1979		
	n	\bar{x}	SD	n	\bar{x}	SD	n	\bar{x}	SD	n	\bar{x}	SD
Nursery School	20	1,34	0,94	20	0,79	0,96	20	1,25	0,96	-	-	-
Grade Two	47	2,05	0,87	47	1,67	0,88	47	1,60	0,81	47	1,84	0,73
Standard Four	47	1,49	0,68	47	0,95	0,56	47	1,25	0,65	47	1,30	0,58
Female	47	1,79	0,93	47	1,15	0,86	47	1,20	0,65	38	1,37	0,66
Male	67	1,65	0,81	67	1,27	0,86	67	1,53	0,85	56	1,71	0,71
Total	114	1,70	0,86	114	1,22	0,86	114	1,40	0,79	94	1,57	0,71

Table II. Levels of statistical differences between the variables.

PHP and/or modified PHP Scores	Education Levels	Sexes
Pre NDHW 1979 vs 1 month post NDHW	Not significant	Not significant
Pre NDHW 1979 vs 3 months post NDHW	Not significant	p<0,01
Pre NDHW 1979 vs 6 months post NDHW*	Not significant	p<0,05

* Excluding Nursery School Pupils

scores after N.D.H.W. 1979 which was generally maintained 6 months after N.D.H.W. 1979 (Table I). The boys displayed a similar trend at 1 month, but they reverted to their pre-N.D.H.W. 1979 PHP or modified PHP scores 6 months later (Table I).

3,17. Eight months later the scores had improved to 2,75. The results of the Standard IV pupils (aged 11-12 years) involved in this study revealed a mean PHP score of 1,49 prior to N.D.H.W. 1979 and 6 months later a mean score of 1,30 was recorded. Thus a similar

trend in oral hygiene improvement was evident. Podshadley and Haley (1968) reported that the mean PHP scores for 11 to 12 year old North American children was 3,37. The reason for the lower scores in the present study, compared to those of Podshadley and Haley (1968) and Horowitz *et al* (1976), may be the result of examiner variables, sample and environmental differences, the effects of various preventive programmes and/or competence levels of the pupils. It is, nevertheless, encouraging to see that these results compare favourably with the results reported in the North American studies.

As the different educational level groups displayed no significant differences with regard to oral hygiene improvement, it appears that any of the three groups could function as target groups. However, other practical, psychological and sociological factors need to be considered prior to the selection of ideal target groups.

A difference between the male and female pupils was noted. The performance of the female pupils, unlike that of the male pupils, was consistent a few months after N.D.H.W. 1979. No specific reason can be cited for this, other than the possibilities that female pupils may be more conscious of their appearance and hygiene or that their mean pre-N.D.H.W. PHP score is higher than that of the males.

N.D.H.W. 1979 did appear to have positive effects within this pupil sample, although the improvement in oral hygiene which was evident immediately after N.D.H.W. diminished with time. This trend has also been noted by Horowitz *et al* (1976), who stated that at a second follow-up examination after a summer vacation, the indices were almost at baseline levels in the treatment group. In view of the above, it is suggested that two evenly spaced N.D.H.W. programmes be introduced every year, should the manpower and/or economic factors make it a feasible proposition. In addition, it is imperative that future programmes be geared, not only towards enhancing the initial improvement, but also towards the long-term oral hygiene performances, especially in the case of male pupils.

As long as behavioural scientists are unable to determine a well developed technology which induces behavioural changes in all the ethnic groups in South Africa, preventive programmes which attempt to alter an individual's personal habits and lifestyle appear to have a limited chance of success. A specialized educational, behavioural science, medical, dental and paramedical committee should, therefore, be constituted in

order to reorganise the various school syllabuses of all races and provinces to integrate scientific and health concepts and general education where appropriated (Jodaikin, 1979). This approach, together with N.D.H.W. programmes, will assist in improving the oral hygiene (as well as other general health regimes or precautions) of the South African public.

At present various competence levels are being correlated with the data reported in this study. It is hoped that these results will assist in understanding the various patterns described above and contribute to the improvement of future preventive programmes.

Considering the limitations intrinsic in preventive programmes, future programmes for the prevention of dental caries and periodontal disease must continue to utilize and explore those approaches to prevention which operate, for the most part, independently of the patients' performance and co-operation (Heifetz and Suomi, 1973), the classic example being water fluoridation.

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