TRENDS IN DENTAL CARIES PREVALENCE AND SEVERITY IN SOUTH AFRICA

PJ van Wyk, C van Wyk
Dept of Community Dentistry,
University of Pretoria, P O Box 1266, Pretoria, South Africa, 0001

Objectives

The purpose of this study was to determine trends in dental caries prevalence and severity amongst South African children, in terms of the dimensions of time, person and place.

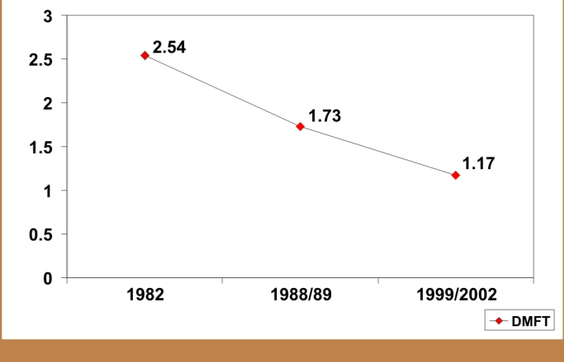
Methodology

During the past 25 years, 3 national oral health surveys were conducted to determine the prevalence and severity of dental caries in South Africa. These surveys were conducted in 1982[1], 1988/89[2] and 1999/2002[3]. The data obtained from the 3 surveys was used to determine the trends in dental caries prevalence and severity amongst South African children.

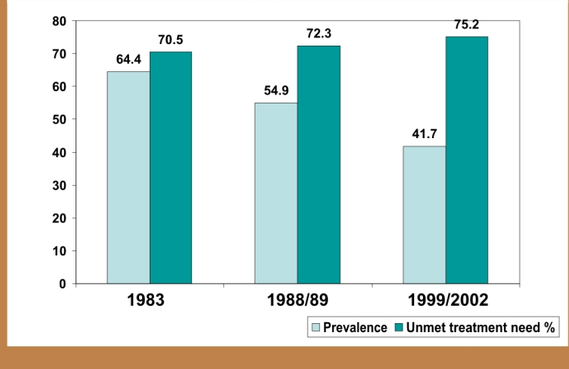
Results

Trends in terms of the variable, time

Trends in the DMFT of 12-year-old South African children



Trends in the prevalence of caries and untreated caries in 12-year-old children in South Africa



The results show a decrease in both the prevalence and severity and an increase in the unmet treatment need. This increase in untreated caries took place despite a decrease in the prevalence and severity of dental caries, implying a reduction in the quantity of dental services rendered to schoolchildren.

Trends in terms of the variable, person

A statistical significant ($p<0.05$) decrease is observed in the DMFT from 1982 to 2002 in all the population groups. The largest reductions were recorded in the White group, 75.3%; the Asian group, 64.1%; the Black group, 49.8%; and the least in the Coloured group, 44.8%. The results also show high levels of untreated caries (D) and very low levels of treatment (M and F) in all groups, except the White group.

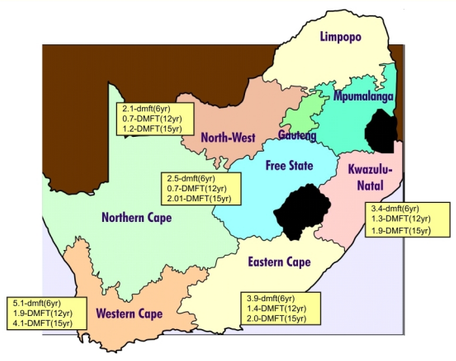
Trends in the mean DMFT and components of the DMFT amongst 12-year-olds, by population group

	1982/83				1988/89				1999/2002			
	DMFT	D	M	F	DMFT	D	M	F	DMFT	D	M	F
Asian	2.95	2.05	0.65	0.25	1.30	0.90	0.10	0.30	1.06	0.64	0.26	0.16
Black	2.15	1.80	0.35	0	1.75	1.40	0.30	0.05	1.08	0.90	0.15	0.03
Coloured	3.75	2.35	1.20	0.20	2.00	1.20	0.50	0.30	2.07	1.46	0.41	0.20
White	3.70	1.20	0.10	2.40	1.70	0.40	0.10	1.20	0.95	0.35	0.07	0.53

Trends in terms of the variable, place

In 2002 the highest mean dmft/DMFT scores for dental caries were recorded in the coastal areas and the lowest in the interior. Further analyses of the severity of dental caries show dental caries to be more severe in the primary than in the permanent dentition and also that the DMFT increased dramatically from the 12- to the 15-year-olds.

Trends in the dmft (6 yr) and DMFT (12 and 15 yr) at selected geographical locations in South Africa 1999/2002



Discussion

A very positive observation, in terms of dental caries, is the huge reduction in dental caries prevalence and severity in children during the past 25 years. This reduction may be attributed to the widespread use of fluoridated toothpaste in South Africa[4,5]. Analysis of the severity of dental caries amongst 6-year-old children, in the current study, shows dental caries to be more severe in the primary than in the permanent dentition. Studies suggest that caries of the primary dentition is associated with early protein-energy malnutrition[6,7,8,9,10]. Social, demographic and lifestyle factors relating to the mother have also been shown to influence the early eating patterns of children[6]. These were: the addition of sugar to the child's comforter and the number of times per day this is done, how often the child is put to sleep with a bottle, whether the child is breast-fed or not and the length of time the child was breast-fed. The DMFT however, increased dramatically from the 12-year-olds to the 15-year-olds. In other studies[5,11] it was found that this increase could mainly be attributed to caries on the second permanent molar. As children get older there is an increased exposure to cariogenic agents, this fact combined with the position of the second permanent molar in the mouth make it more vulnerable to caries attack[5,11,12]. Compared to 12-year-old Asian, Black and White children, 12-year-old Coloured children present with higher dental caries prevalence and severity rates. This finding can be explained by the fact that in contrast to Black Africans, most Coloured South Africans live in the coastal Western Cape province, where drinking water fluoride levels are very low[13,14]. Steyn *et al*[8] also suggested that due to intake of sugars, people of the Coloured population group substantially have more caries than people of the Black population group. In South Africa, the socio-economic status of the Whites is still considerably higher when compared to that of the Black, Coloured, and Asian populations[15]. Therefore, by implication, members of the White population have better access to fluoridated toothpaste, health promotional aids and dental services[15].

Conclusions

1. Dental caries prevalence and severity in the permanent dentition of children reduced significantly during the past twenty years.
2. Dental caries is more severe in the primary than permanent dentition.
3. The severity of dental caries increased dramatically from 12- to 15 year-old children.
4. Dental caries is more prevalent and severe amongst the Coloured and Black population groups.
5. Higher dental caries prevalence and severity rates were recorded in the coastal regions as compared to the interior regions.
6. The percentage of untreated caries in 12 year- and 15 year-old children increased, indicating a decrease in the dental services rendered to schoolchildren.
7. More than 70% of dental caries, in 6 year-, 12 year- and 15 year-old children, go untreated.

REFERENCES

1. Williams WN. Dental Caries in 12-year-old South African school children. Journal of Dental Research 1983; 64(4):597.
2. Department of Health. National Oral Health Survey: South Africa 1988/89. Pretoria: Government Printer; 1994.
3. Department of Health. National Oral Health Survey : South Africa 1999/2002. Pretoria : Government Printer; 2003.
4. Van Wyk PJ and van Wyk C. Oral Health in South Africa. International Dental Journal 2004; 54:373-377.
5. Van Wyk PJ, Louw AJ and du Plessis JB. Caries status and treatment needs in South Africa: Report of the 1999-2002 national children's oral health survey. South African Dental Journal 2004; 59:238-242.
6. MacKeown M and Faber M. Urbanization and cariogenic food habits among 4- 24-month-old black South African children in rural and urban areas. Public Health Nutrition 2002; 5(6):719-726.
7. North K, Emmett P and Noble S, the ALSPAC Study Team. Types of drinks consumed by infants 4 and 8 months of age: sociodemographic variations. Journal of Human Nutrition and Diet 2000; 13:71-82.
8. Steyn NP, Myburgh NG and Nel JH. Evidence to support a food-based dietary guideline on sugar consumption in South Africa. Bulletin of the World Health Organization 2003;81(8):599-608.
9. Labadarios D, Steyn NP, Maunder E, McIntyre U, Swart R and Gericke G. The National Food Consumption Survey (NFCS): Children aged 7-9 years, South Africa, 1999. Pretoria: Department of Health, Directorate: Nutrition; 2000.
10. Psoter WJ, Reid BC and Katz RV. Malnutrition and dental caries: A review of the literature. Caries Research 2005; 39(6): 441-447.
11. Du Plessis JB, Carstens IL, Rossouw LM and Olivier I. The dental caries status of the urban population in the major metropolitan areas of the Republic of South Africa. In: National Oral Health Survey of South Africa 1988/89, ed PJ van Wyk, 1994; 24-32, Pretoria : Department of Health.
12. Barmes D. Epidemiology of Dental Diseases. Journal of Clinical Periodontology 1977; 4:80-93.
13. Grobler SR and Dreyer AG. Variations in the fluoride levels of drinking water in South Africa. Implications for fluoride supplementation. South African Medical Journal 1988; 73:217-219.
14. Postma TC, Ayo-Yusuf OA and van Wyk PJ. Association of early childhood caries with socio-demographic factors, and area-based sugar consumption and water fluoride levels, in developing countries. Under Review.
15. May J. (ed). Poverty and Inequality in South Africa. Report prepared for the office of the executive deputy president and inter-ministerial committee for poverty and inequality. Durban: Praxis Publishing. 1998.

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Health Sciences