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Black and White pregnant women in Johannesburg, South Africa

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Key words: dental services; oral health; pregnancy

ABSTRACT

DMFT, PDI, OHI-S and utilization of dental services were investigated in a sample of 100 Black and 203 White, pregnant women (meant age for each group, 23,4 years). Using the Students' t Test for independent samples mean DMFT was significantly higher ($p<0,001$) in the White ($\bar{x}=14,5$) compared to the Black group ($\bar{x}=5,5$) but there was no significant difference in the periodontal and oral hygiene indices. The White group used dental services 2,5 times as much as the Black group and there was a marked distinction in the type of service sought by the two groups. Although 45 per cent of Black and 50 per cent of White women indicated a desire for dental advice and preventive treatment, in both groups the subjects displayed an ignorance of the actual extent and nature of the disease in their own mouths.

OPSOMMING

DMFT, PDI, PHI-S en die gebruikmaking van tandheelkundige dienste deur 100 swart en 203 wit swanger vroue is ondersoek (gemiddelde ouderdom vir beide groepe, 23,4 jaar).

Die gemiddelde DMFT was betekenisvol hoër ($p<0,001$) in die wit groep (14,5) in vergelyking met die swart groep (5,5) maar daar was geen betekenisvolle verskil in die periodontale en mond higiëne indekse nie. Die wit groep het tandheelkundige dienste 2,5 keer meer as die swart groep gebruik en daar was 'n merkbare verskil in die soorte dienste wat die twee groepe benodig het. Beide groepe was onkundig met betrekking tot die werklike omgang van die gesondheidstoestand van hulle monde alhoewel 45 persent van die swart en 50 persent van die wit vroue 'n begeerte getoon het vir tandheelkundige advies en voorkomende behandeling.

INTRODUCTION

It has been a consistent observation in several studies outside Africa that the general standard of oral health and of oral hygiene in pregnant women is mostly unsatisfactory (Chapman *et al*, 1971; Löe and Silness, 1963; Maier and Orban, 1949; Ziskin, Blackberg and Stout, 1933; Löe 1965) and wide differences in the personal practice and knowledge of oral hygiene have been reported (Edwards and Rowntree, 1969). During pregnancy, sex hormones (Adams, Carney and Dicks, 1977; Chaikin, 1977; Hugoson, 1971; O'Neil, 1979) and bacterial plaque (Arafat, 1974; Silness and Löe, 1964) have been suggested as predisposing and precipitating factors to dental caries and periodontal disease.

This study was undertaken to compare dental caries, periodontal disease, oral hygiene and utilization of dental services, in a sample of Black and White pregnant women, in Johannesburg, South Africa.

MATERIALS AND METHODS

The White women attended the ante-natal clinic at the Johannesburg Hospital, an academic teaching hospital, in which patients receiving obstetric care consist of indigent patients, those with special obstetrical problems and also staff and students of the medical faculty. This is a selected group since a large proportion of White women in Johannesburg belong to medical-aid schemes which enable them to seek the service of practitioners in private practice. Since the sample was not randomly selected from the general White population it is not a true reflection of the White population of Johannesburg but may be considered as a typical South African White teaching hospital population.

Black women attended the second ante-natal clinic, the Hladi Polyclinic, situated in Soweto, a Black residential area on the outskirts of Johannesburg with a population of approximately one million. There are no specialist obstetricians in private practice in this area, so that inhabitants of Soweto attend local clinics and, if necessary, are referred to nearby Baragwanath Hospital for specialist attention. The group studied was a more representative sample of the Black population of Soweto, although it should nevertheless be regarded as a clinic population. Hladi is considered an "average" socio-economic area. The White sample, a biased hospital population, is difficult to categorise into socio-economic status, and consequently this aspect was not investigated.

Since a previous study on the White group (Rudolph and Vieira, 1981) demonstrated that there were no significant differences in the oral health parameters that were measured between the second and third trimesters of pregnancy, the results in both trimesters have been pooled for this study

The oral examination was carried out at the two clinics in a room, allocated for the purpose, using a portable dental chair and good natural light. All information was recorded on computer coding forms. Dental caries was

diagnosed according to World Health Organization standards (1977) and for the periodontal examination the Ramfjord Periodontal Index (PDI) was used (Ramfjord, 1959). Plaque was made visible using EN-de Kay C Red (R) disclosing solution (Westone Products, London, England). Oral debris (DI-S) and calculus (CI-S) were recorded in each sextant using the criteria suggested by Greene and Vermillion (1964), and the simplified oral hygiene index (OHI-S) was calculated.

A WHO questionnaire (1977) was used to measure the utilization of existing dental health services.

This was designed:

1. to measure a subject's actual use of oral health care facilities, including reasons for use and non-use and types of personnel visited; and
2. to assess the subject's understanding of her own need and desire for care.

For the questionnaire a Black "dental educator" helped to interpret the Black languages. Each interview lasted approximately 7 minutes and the examiner was always present so that difficulties with coding of particular responses were resolved immediately.

Prior to the beginning of the study the diagnosis of dental caries and periodontal disease criteria were discussed with an experienced epidemiologist. The reproducibility of diagnosis was checked by examining 10 per cent of the White sample, it being very difficult to re-examine the Black group. A 92 per cent reproducibility was achieved using the formula suggested by Murray & Shaw (1975).

The observations were transferred to punch cards and analysed in an IBM 570/158 computer using SPSS (Nie *et al* 1975). The Students' t test for independent samples and the chi square test were used and the critical significance value was set at $p < 0,05$.

The ages of the white subjects ranged from 16-40 years and those of the Black subjects from 16-41 years. The mean age within each group was identical, 23,4 years. The Black women had a much lower educational level than the White women (Table I). The White subjects had a mean of 1,7 pregnancies (sd 0.9) while the mean for the Black women was 2,1 (sd 1.7).

Table I: Highest educational level of Black and White pregnant women.

	Black patients %	White patients %
No school	6	–
Nursery school	2	–
Primary school	39	–
High school	53	77
Technical college		16
University		7
	100	100

Table II: Mean caries data (and standard deviation) of Black and White pregnant women.

	Black patients n = 100			White patients n = 203				
	$\bar{x}$	SD	% of DMFT	$\bar{x}$	SD	% of DMFT	t	p
DMFT	5,5	(5,7)		14,5	(5,2)		10,98	$p < 0,001$
D/DMF	3,6	(3,5)	65	3,8	(3,5)	22	2,13	NS
M/DMF	1,9	(2,9)	34	2,2	(4,0)	15	0,22	NS
F/DMF	0,05	(1,2)	1,5	9,2	(5,3)	63	17,50	$p < 0,001$

Oral health status

Details of dental caries observations are summarized (Table II). The mean DMFT scores, White 14,5 and Black 5,5, indicate a striking disparity in the caries prevalence of the two groups. Eighteen per cent of the Black group had never experienced caries, a filling or an extraction, but no White subject had a similar record. The ratio of the decayed, missing and filled teeth to the total DMFT score, showed that in the White group the filled teeth component of the DMFT index was the largest, namely 63 per cent; 22 per cent were decayed teeth that needed treatment and 15 per cent of the teeth had been extracted as a result of caries. A relatively large number of patients (40 per cent) had one or more teeth with secondary caries. The total number of filled teeth for the White group was 1 840, with a mean of 9,2 fillings per patient. In comparison only 9 fillings were observed in the entire Black group, 5 of which were found in one patient.

This disparity was emphasized by the proportion of decayed teeth to the DMFT score which was 65 per cent in the Black group. It is noteworthy in that nearly a third of these decayed teeth were third molar teeth.

Black females used dental services mostly for relief of pain and this was reflected by a ratio of missing teeth to DMFT of 34 per cent.

The pattern of dental caries in the individual teeth in the maxilla and mandible (Fig. 1) in both groups of women is consistent with studies reported by Staz (1938) and Cleaton-Jones (1979).

The mean PDI was 2,1 in both groups and in both groups it was the gingival component of the index that was primarily responsible for periodontal disease prevalence (Table III).

Plaque was present in most subjects and its distribution was evident in all of the sextants that were examined. The minor difference in the oral debris scores was not statistically significant.

Service utilization

The enquiry into the utilization of dental services (Table IV) indicated that White pregnant women had visited a

Table III: Mean data (and standard deviation) of periodontal disease and ranges of periodontal disease of Black and White pregnant women.

	Black	White
Number	100	203
Mean periodontal disease index (sd)	2,1 (0,9)	2,1 (1,0)

Periodontal Disease Index Ranges

	Black	White
	% of sample	% of sample
0	2,2	0,5
0,1 – 0,9	7,6	7,4
1,0 – 1,9	21,5	35,0
2,0 – 2,9	54,9	36,5
3,0 – 3,9	13,8	17,7
4,0 – 6,0	0	3,0
	100,0	100,1

$Chi^2 = 14,3$; df = 5; $p < 0,05$ $p > 0,01$

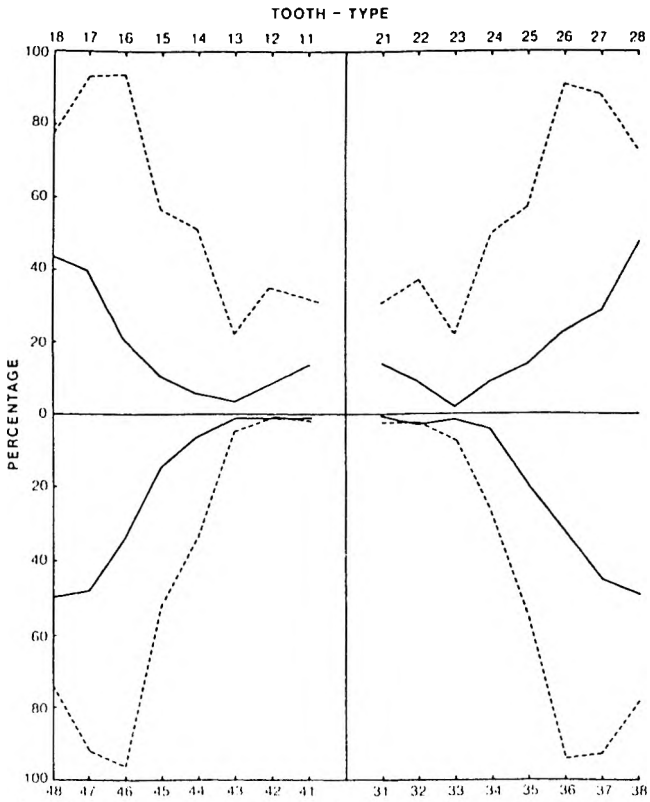


Fig 1: *The percentage frequency of dental caries in individual teeth.*

dentist two and a half times more often than the Black group during the same period. Other notable points were that 15 Black patients had never seen a dentist at all. Motivation for going to the dentist varied but many patients went because "something was sore" or "to get something fixed".

From the responses to the questionnaire there were only 3 White patients of the total number of women in the study who had had treatment by an oral hygienist. In both groups most of the patients displayed an ignorance of the actual extent and nature of the disease in their own mouths.

DISCUSSION

Antenatal visits by pregnant women, a well accepted preventive habit of many pregnant women (Fredman, 1979), are ideal opportunities to incorporate a dental health education programme. Their behaviour and subsequent influence would have important implications, as the dental health of the mother has been shown to be the best predictor of dental health of her children (Tijmstra, 1981).

It is hoped that the educational level observed in the two groups will be of value in developing future dental health programmes in our area. Many preventive programmes in the industrialized countries have had only minimal success because they have been based on mass-marketing strategy aimed essentially at the underlying supporting values which characterize middle class society (Blaikie, 1979). What is required is more appropriate dental health instruction which is directed at specific target populations who have different patterns of dental disease. In this study this is emphasized since the mean

Table IV: Questionnaire

	Percentage responses to Questions			
	Black	%	White	%
	n		n	
	100		203	
Question 1. "Did you obtain dental care in the last 12 months?"				
Yes		23		59
No		77		41
Question 1(a) "For what reason?"	23		120	
To get teeth cleaned		2		2
Something was hurting		70		21
To get something fixed		15		28
Went for a check-up		3		39
Question 1(b) "Who treated you?"	23		120	
Dentist		100		97
Dental nurse/ therapist		–		–
Hygienist		–		3
Question 1(c) "Why not?"	77		82	
Nothing wrong, no reason to go		90		20
Afraid of dentists, don't like dentist		2		13
Can't afford it, costs too much		2		3
Didn't want to spend money on dental care		–		–
Was too busy or didn't get around to it.		1		17
No service available		2		35
Other reason (specify)		3		12
Question 2. "Is anything wrong with your teeth, gums or mouth now?"	100		203	
No		41		42
Yes, teeth only		39		16
Yes, gums only		19		20
Yes, teeth and gums		–		14
Yes, other (specify)		1		7
Question 2(a) "What sort of advice or treatment do you want?"	100		203	
Preventive		29		35
Examination or cleaning		10		8
Scaling or periodontal care		6		7
Fillings, crowns or bridges		1		7
Don't know		37		25

DMFT of 14,5 in young White women contrasted to the significantly lower mean DMFT of 5,5 of the Black women, and suggests a stronger emphasis on caries prevention for White subjects.

The periodontal disease index in both groups was identical, and a consistent presence of plaque in both groups indicated an unsatisfactory state of oral cleanliness, suggesting that equal emphasis on this problem should be made for the two groups.

With few exceptions the patients were unaware of the

basic principles and practices fundamental to oral hygiene. Many of the subjects sought professional dental treatment only when compelled to. This confirms the results of Chapman *et al* (1971) who stated that 71 per cent of pregnant women studied attended to dental care only when symptoms were present.

The infrequent use of dental auxilliary personnel in both groups was notable. The use of a dental hygienist and "health educators" could be extremely valuable in improving the oral health of this important group. The ignorance regarding the actual extent of the disease in the patients' own mouths accords with the finding of a previous study by Richards *et al* 1965.

The findings in our study confirmed the existence of a major oral health problem in the pregnant population group. The prevailing levels of dental disease; the lack of adequate dental services, particularly preventive; ignorance and apathy, fully warrant the implementation of a comprehensive oral health care programme for the expectant mother. Beliefs about health and health care are integrally bound to the culture of any society and therefore the programmes must be designed to meet the specific dental and educational needs of the women in the two groups studied.

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