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DENTAL CARIES IN GEZIRA PROVINCE

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ABSTRACT

Objectives:

The present study was aimed:

1. To update information on the present status and prevalence of dental caries disease.
2. To assess the oral health situation of the study area by assessing the dental caries prevalence: i.e. DMFT & DMFS formulate strategy and policy for promoting dental health services aiming at achieving a good standards of oral health to attain appropriate reduction in dental caries prevalence.

Material and Methods: Thirty study sites in rural area in Gezira province were chosed from five study councils including Alhosh, Wad Alnaeem, Alhag Abdalla, Almadina Arab and Hantoub The study sample was randomly selected to include 10% of patients attending Wad Medani Dental and Military Dental Hospitals during a week time (6 days). All patients attended El Gadaiea and Marinjan Health Centres (n = 201) and sampled patients at rural health institutions during the same period were recruited (n = 448). The study tools were direct pre-coded questionnaires, and a checklist. The procedure involved dental clinical examinations to estimate the dental health services assessed by measuring, the decayed, missing and filled teeth (DMFT) index

Results:The results revealed a poor level of oral health services as reflected by the presence of a high level of decayed and missing components of DMFT. The missing teeth were mainly due to increased extraction of dental caries. The mean DMFT index was 6.2 and 6.7 in urban and rural populations respectively. This DMFT score exceeds the WHO stated DMFT goal for standard oral health. This results of thre present study showed a high DMFT score in Gezira Province both in rural and urban areas.

Conclusion: In conclusion that there was a high prevalence of dental caries due to poor provision of dental services in both availability and quality in Gezira Province. We may recommend that preventive measure has to be restructured to decrease the dental caries prevalence in rural and urban areas.

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INTRODUCTION

Dental Caries is defined as a localised post eruptive pathological process of external origin involving softening of the hard tooth tissues, proceeding to the formation of a cavity. There are many factors that determine dental caries: mainly time, place and individual (1). Dental caries may also be defined as a dynamic process involving the exchange of calcium and phosphate ion between tooth structure and saliva in the presence of acids produced by the fermentation of carbohydrates by oral micro-organisms (2). DMFT rates tend to rise with age as dental caries process is irreversible prevalence if cavitation occurres. There are many factors determining the dental caries particularily, water fluoridation (3). Environmental rather than genetic factors play a predisposing role not a causal one in dental caries (4). The health system for dental care delivery is probably strongly influenced by the relationship between DMFT rates and socioeconomic status (5). Regardless of the system, low-income groups have less filled teeth than high-income groups, while the number of decayed and missing teeth is inversely related to income and to the level of education. However, there is strong positive correlation between socio-economic factors such as educational level, income, dietary habits and dental caries in African populations (6). DMFT may represent the cumulative impact of all caries. At the societal level mean DMFT score indicates the overall impact of oral health care system, caries prevention, treatment measures and other social, cultural and economic factors. The proportion of each component reflects the degree to which the oral health care system successfully treats dental caries (7,8). Many studies in Europe and USA demonstrated that females care more for their teeth and so used dental services more than males (8).

Many studies carried by Davies et al (1987) among adolescent and adults aged 14-62 years in the United States, National Institute of Health (1987) among adult aged 18 years or more in the United States. Among adults aged 16-30 years in Strasbourg, France demonstrates more consistently that women tend to have fewer decayed teeth than men Chen, et al (1997) (8).

Studies in Sudan carried by WHO in 2000 showed that dental caries prevalence among both males and females was almost the same. However DMFT in central states in 12 years old children and adult was 3.2 and 6.4 respectively(9).

The mean DMFT score in Khartoum and Central States in the year 1966 according to Emsile was 0.7. Ten years later in the year 1977 Barmes' reported in the same states 1.7 DMFT score. Dowsy reported a mean DMFT in Southern states in 1981 as 1.0. Ibrahim et al in years 1985 and 1986 found the mean DMFT score in Khartoum was 1.7 and 2.7 respectively. While Ghandour in 1988 found the mean DMFT in adults and older patients in central state at 2.3 and 3.2 respectively. The result for 12 year-old children by Ghandour in 1991 showed that in the rural sites examined in the Western, Eastern and Central states, the average DMFT scores were 0.0, 0.2 and 0.1 respectively. This could be considered low compared to those of the Northern state (DMFT=0.9) and especially when compared to Khartoum (DMFT=2.9) (11).

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MATERIAL AND METHODS

Study area and population:

Gezira Province located at the centre of the Gezira state is 6000 square kms an area with a population 1,757,265 (Census projection, 2003). Its central location makes it easily accessible for oral health services. Furthermore its high population density, strategic location, since it includes the capital city of the State; it is then more or less well represents the whole state. For those reasons, this province was purposefully selected to be the site for the present investigation. Of the six provinces comprising the Gezira State, Gezira Province is the largest, with respect to area and population. It is formed of 12 councils, including "Wad Medani" Council.

Sampling:

The study areas was divided into two clusters:

1.The Urban Cluster**:** includes Wad Medani institutions that provide oral health services. They constitute two hospitals and two health centres. All four health institutions providing oral health services in the two councils (Western and Eastern Wad Medani councils) comprising the urban area of Wad Medani were selected

The study included all health institutions with oral health facilities to interview patients and estimate DMFT

The sample size for this intervention was estimated as follows:

Wad Medani City**:** including two hospitals and two health centers. 10% of the patients visiting the two hospitals within one week were recruited. All the patients attending the other two health centres within one week were also included.

2.The Rural Clusters*:*

I.: With health services including oral health services

II.: Without health services of any sorts. The study rural area were purposefully selected from the Gezira Province according to the following criteria:

Selection criteria:

The selection criteria was based on the geographical location and the distance of the sampled area from each other and from Wad Medani city. Towns and villages with medical and dental health services and the size of the population of the areas were also selected.

Respondents selected from those areas were interviewed and examined for dental caries, using the DMFT index. All examinations were carried out by one examiner (the author).

Rural areas selection:-

Five rural councils (50%) were selected purposefully, based on the above criteria.. The five councils were El Housh a heavily populated council including a large number of villages and camps, and contain a large number of health institutions. El Haj Abdalla was selected to represent the southern part of the province. Hantoub representing the eastern part of the province. Al Madina Arab this represents the southwestern part of the province. While Wad El Naeem council represents the middle part of the province.

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These areas were clustered as follows:-

I.: Areas with health facilitiesThese are 115 areas providing health services. Due to the smaller number of areas, 20% were selected randomly, comprising approximately 25 areas. These were further clustered so as to select five areas in each council, of these three areas were purposefully selected so as not to miss any institution providing oral health services. All patients attending the health institutions were interviewed and examined for DMFT by the author.

II.: Areas without health facilities:

There were 293 areas without any type of health facilities in the selected five councils. 10% (30) of them were purposefully selected according to the selection criteria shown above. They were further clustered so as to select six areas in each council, of these three areas were randomly selected for subject interviews and DMFT recordings.

Citizens of those areas were motivated to gather at a specifically selected area in the village or the camp to attend an oral health campaign using a mobile microphone. All those who attended the campaign were interviewed and examined for DMFT by the author.

Survey instruments to assess dental caries:

The instruments included a checklist which was used to collect information on type of dental health services in selected oral health care institution and number of patients visited the institution during a 6 days period. The survey instrument also included a precoded structured questionnaire and the WHO basic oral health assessment form to assess dental caries prevalence.

Dental caries situation analysis:

This part of investigation aimed at estimating the dental caries prevalence measured using the DMFT index. The index components are: decayed (D), missing due to caries (M) and filled (F) tooth (T). It was used to reach an estimation illustrating how much the dentition until the day of examination has become affected by dental caries.

Statistical Analysis Methods:

Used descriptive statistic the data with errors such as extreme values or outliers were removed from further analysis adjustment. Descriptive statistic was also used to check the data, dental caries description or community needs parameters.

Chi squared test was used, as the data is binomial to assess if the DMFT scores are significantly different. The statistical significance of the difference was assessed by calculating and interpreting the p-value. A p-value less than 0.05 was interpreted as a significant difference. The SPSS statistical programme using Microsoft windows was used to process and analyze the data and for clearing the data and check in variable and relation between variables.

RESULTS

This study provides information on dental caries prevalence and assessment of the oral health situation in urban and rural clusters in Gezira Province. The study covered 34 study site settings

Oral health behaviour

Table 1 shows the distribution of sample of patients reported for dental care health institutions during the period of the study. Greater proportions of the sample were women (63.2%) compared to men (36.8%) in the urban settings. Illiteracy was higher in rural areas with a relative frequency of 146 (32.6%). With

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respect to toothbrushing behaviour (n = 141, 70.1%) of 201 subjects used to brush their teeth more than once (Table 1).

Table (1) The Distribution of the Study Sample According to Gender, Level of Education and Tooth Brushing Practice

Description	Urban n=201		Rural n= 448		Total 100%
	N	%	N	%	
Gender					
Men	74	36.8	240	53.6	314
Women	127	63.2	208	46.4	335
Level of education					
Illiterate	30	14.9	146	32.6	176
Had schooling	147	72	259	57.9	406
Higher education	24	11.9	37	8.3	61
No answer	00	00	06	1.3	06
Toothbrushing					
Once	60	29.9	89	19.9	149
Twice	118	58.7	263	38.7	381
More	23	11.4	83	18.5	106
No answer	00	00	13	2.9	13

Table 2 shows the distribution of the study sample according to residence. It was clear that subjects from urban areas 145 (72.1 %) are significantly more than those from rural areas 56 (27.9%) with a ratio of 3:1, while patients from rural areas who attended Wad Medani Dental Hospital for oral health problems were 43 (43.0%). The number of patients from urban area was 57 (57.0%) (Table 2).

Table 2: Distribution of Study Sample According to Residence.(N = 201)

Residence	Urban		Rural		Total
	N	%	N	%	

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Wad Medani Dental Hosp. Military hosp. Maringan H. centre Al Gadaia H. Centre	57 34 21 33	57.0 83.0 87.5 91.7	43 07 03 03	43.0 17.0 12.5 08.3	100 41 24 36
Total	145	72.1	56	27.9	

Table 3 shows a comparison of the DMFT in urban and rural populations investigated areas in the study. DMFT was 6.2 ± 0.35 in Wad Medani town and 6.7 ± 0.26 in the rural councils, and statistically significant, $P < 0.05$.

Table (3) Prevalence of Dental Caries in Urban and Rural Areas:

Area	**No.**	**Mean**			**DMFT± SD**
		D	M	F	DMFT
Urban	201	3.4	2.7	0.1	6.2 ± 0.35
Rural	448	4.0	2.2	0.4	6.7± 0.26

Table 4 describes the DMFT in rural councils. Decayed teeth or teeth missing due to caries predominate in all rural councils. Whereas filled teeth were very rare. The results were statistically significant, P = 0.0002, when compared between councils, except when the comparison was made between Al Housh and Al Madina Aarab where the result was not statistically significant. There was also no statistically significant association between Al Madina Arab and Alhaj Abdalla where the P value was not significant.

Table (4) The Prevalence of Dental Caries in Rural Councils

	D	M	F	DMFT
Wad Alneem	3.7	4.3	0.5	7.3
Alhoush	3.0	1.4	0.4	4.8
Al Madina Arab	3.7	1.6	0.5	5.8
Hantoub	4.2	2.4	0.3	6.9
Alhag Abdalla	5.1	2.3	0.5	7.8

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DISCUSSION

This study documents information on the current status of dental caries in urban and rural areas in Gezira province. The main findings showed that more females than males visit dental clinics. These findings agree with WHO reports (5.8). Women were more likely than men to seek oral health care. This may be because women have more dental health problems. There is a conflict in the literature with regard to the prevalence of dental caries in relation to gender. A report from Sudan showed that there was no difference in dental caries prevalence between males and females (6). Tooth brushing behaviour was common among urban compared to rural population. Increased awareness of the role of this behaviour in maintenance of good oral hygiene in urban areas is expected. This observation was supported with that reported by Jenne et al (7). They reported on the positive relationship between tooth brushing, high education and socio economic levels and dental carties prevalence. More females practice regular and frequent tooth brushing behaviour than males to maintain good oral hygiene. The present study showed that extraction of teeth was the most common treatment in both urban and rural health facilities. Also revealed that magnitude of dental caries disease parameters such as the presence of DMF. These findings were supported by other studies (5,6).

The DMFT in urban area compared to rural area was significantly lower. This may be due to many factors including level of awareness, services available and socioeconomic status. Scheiham (1979), Heloe et al (1981) reported that the number of decayed and missing teeth is inversely related to income, level of education and water fluordation (3,4). DMFT mean scores was indicate the overall impact of oral health care system, caries prevention, treatment measures and other social, cultural and economic factors. High income and use of refined carbohydrate food increase the prevalence of dental caries. The

proportion of each of the components may reflect the degree and success in dental caries treatment. In developing countries the situation is beginning to deteriorate where oral diseases are on the increase (8).

The present study indicates that the DMFT score in urban and rural areas was 6.2, 6.7 respectively. WHO (2000) investigated DMFT and their components in the former Central State. The results showed a high caries level in older age group. Previously in this State a DMFT of 3.2 level for 12 years old children and they are 6.4 for older age was reported (9,11). The findings of the present study suggest that there was no improvement in dental caries. That may be due to the lack improvement in dental health services. However a well planned and executed preventive programmes are needed.

CONCLUSION

The results of the present study showed an increased prevalence of dental problem in Gezira Province faced with meager preventive and curative dental health services especially in rural areas.

This study is meant to assemble and assess the dental caries and distribution of this disease in Gezira province. The available data revealed by this research showed prevalent oral health problems as indicated in this study by a high DMFT index. A tremendous effort and commitment from the state national and federal government is highly needed to reduce the dental caries prevalence, particularly in rural areas (DMFT) using different approaches including dental health education.

RECOMMENDATIONS

There is an urgent need to develop a strategy with comprehensive preventive and promotive oral health care components. This strategy should be flexible and properly adjusted according to the present level of demand to achieve national goals. The following recommendations are suggested to make this strategy feasible.

1- Creation of a system to collect demographic, epidemiologic and clinical records information.
2- Priority should be given to health promotion, prevention, disease control and complementary restorative care of high quality.
3- Promotion of appropriate self care and dietary advices

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4- Participation of consumers and communities in organization and implementation and financing of health care

5- Assessment and monitoring of fluoride levels in drinking water and other resources.

REFERENCES

1. Sathe P V; Amita Mali. Oral Health Education, in Textbook of Community Dentistry. 2nd ed, Paras (Publi), Hyderabad. 2001; 210-222.
2. Ivor G. Chest Nutt. OxHord Clinical Dentistry. Text Book, 2001.
3. Sheiham A. The epidemiology of dental caries and periodontal diseases. Journal of epidemiology. 1979; 6 (7): p. 7-15.
4. Heloe I A; Haurggordm O. The rise and fall of dental caries. In: Community dentistry-oral epidemiology. Copenhagen 1981; p. 295.
5. Ibrahim Y A; Batthall D; Corlsson. Dental Caries and Streptococcus Mutans in Sudanese school children, Odontostomator Trop, 1985, VII, 2, p. 61-63.
6. Chandra S.; Shaleen C.. Community Dentistry textbook, 2nd ed. New Delhi, 2002.
7. Jenne F H; Green W H. School dental health In: Turner's school health and health education C.V. Mosby 7th edition. London p. 272-334.
8. Chen M R; Adersen M D; Barmos E M; Leclerca H C; Lyttle S. WHO comparing oral health care systems. A second international collaborating study. WHO Geneva in collaboration with center for health administration study University Chicago, 1997.
9. Ghandour I A. WHO Intercountry Meeting on Development of Comprehensive Oral Health Policies. Oral Health in the Republic of the Sudan, Syria – Damascus, 28 Apr.-2 May 1991.
10. WHO oral health country/Area profile programme, Department of non-communicable diseases surveillance/oral health WHO Collaborating Centre, Malm. University Sweden 2000/06/22.
11. Ghandour I A; Ibrahim Y E. National oral health plan for Sudan (2001-2005) short term WHO consultantcy. Assignment report CSA 99/165 (unpublished) .
12. Nakajima H. Editorial world health day, 1994-oral health for a health life, world health the Magazine of the WHO 47th – year oral health 1994; 1: 1.