EDITORIAL

Prevalence and Management of Periodontal Diseases in Gezira Province (Central Sudan)

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Abstract

Objectives: This study aimed to assess the status of present periodontal diseases in Gezira Province. The facilities investigated included those in urban and rural areas including Wad Medani Dental hospital, Wad Medani Military Hospital, El Gadaiea Health Centre and Maringan Health Centre.

Methodology: The study tools were direct pre-coded questionnaires, and a checklist. The procedure involved dental clinical examinations of patients to estimate periodontal diseases assessed by measuring calculus, gingival bleeding and periodontal pockets (PI index). The study sample was randomly selected to comprise 10% of patients attending Wad Medani Dental and Military Dental Hospitals during a week time period (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).

Results: Thirty study sites in the rural areas were chosen from five study councils including Alhosh, Wad Alnaeem, Alhag Abdalla, Almadina Arab and Hantoub. They comprise 418 towns, villages and camps, of the only 118 had health services, including only four dental units. This was the reason that most of rural populations seek oral health services for periodontal diseases and dental caries in Wad Medani health institutions. The result showed that the prevalence of gingivitis and periodontal diseases were more prominent in the rural areas, while the management of them were meager in both the urban and rural areas.

Conclusion: From the results of the present study could be concluded that there was a high prevalence of periodontal diseases due to poor provision of dental services in both quantity and quality at Gezira Province.

Introduction

Periodontal diseases has been defined as "any pathological process affecting the periodontal tissue". The term periodontal diseases has been given different meanings and it is used in a general sense to encompass all diseases of the periodontium. Traditionally periodontal diseases have been divided into two major catogries gingival disease and periodontal diseases.

The prevalence of destructive periodontal diseases follows a linear progression from a adolescence to old age. The strong correlation of periodontal diseases with age may probably reflects the cumulativde effect of the disease rather than diminished resistance (1). The primary cause of periodontal diseases is bacterial plaque irritation. However small amounts of plaque may be compatible with gingival and periodontal health and some patients may resist larger amounts of plaque for long periods without developing destructive periodontitis. A number of other factors both local and systemic may predispose towards plaque accumulation or alter the tissue response to plaque. They may be regarded as secondary etiological or aggravating factors (2). Peirodontal diseases constitute a major health problem in many developing countries. Nwevertheless, in Sudan the prevalence of periodontal disease was lower than in Iran, but higher than Ethiopia with a mean Periodontal Index (PI) of 1.8 and a range of 0.1 – 1.5 among 10-39 years old (3). In the United Kingdom it was found that low socioeconomic groups are likely to have more severe periodontal diseases than high socioeconomic groups (4). The literature generally demonstrates that periodontal diseases in both children and adults is more prevalent and more severe among low education, income occupational groups compared with the high socioeconomic groups (5). This pattern seems to exist across all types of economics and low income developing countries.

A retrospective study in Khartoum showed that periodontal diseases was more prevalent among females of all ages. Fifty two percent (52%) of the females examined presented with gingivitis, 30% periodontitis, 4% juvenile periodontitis and 14% other periodontal problems. The findings may clearly

indicate that the severity of periodontal diseases increases with age, but still very few adults less than 35 years of age showed signs of periodontal destruction. Nevertheless, it must be mentioned that in rural Sudan the majority of periodontal diseases present as recession, which was not a result of periodontal treatment (6). Still more studies of periodontal diseases prevalence and course among Sudanese population are needed, hence the present study was designed.

The Objectives of this study were: 1. To evaluate and assess the present status of periodontal diseases prevalence and their management at Gezira Province, 2. To identify periodontal diseases relevant needs for treatment, 3. To identify the level of satisfaction of people treated for periodontal diseases at urban and rural dental health institutions with regard to the present status of oral health services.

Material And Methods

Study area and population:

Gezira Province located at the center of the Gezira state is 6000 square kms an area with a population of 1,757,265 inhabitants, according to the 2005 Census projection. Its central location makes it easily accessible for oral health services. Furthermore because of its high population density, strategic location, it contains the capital city of the State it is then more or less represents well the whole state. For these reasons, this province was purposefully selected to be the site for the investigation. Of the six provinces comprising Gezira State, the Gezira Province is the largest, with respect to area and population. It is formed of 12 rural councils, including the capital city, 'Wad Medani' Council.

Wad Medani city provides different dental services for people from other towns, villages and camps. There are two hospitals and two Health Centers at Wad Medani City which provide oral and dental health services. The other health service institutions of Wad Medani have no dental care services.

Sampling:

The study areas were divided into two clusters:

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

The survey included all health institutions with oral health facilities. Ten percent of patients visiting the Dental Hospital throughout the six days period were examined. While all patients visiting the other institutions during the whole six days period were interviewed and their periodontal health was recorded by the investigator. The sample size for this intervention was estimated as follows: Wad Medani City **including** two hospitals within one week were recruited. All patients attending the other two health centers within one week were also included.

2. The Rural Clusters: These comprise towns, villages and camps i/ With health services including oral health services and ii/ Without health services of any kind and a sample of 10% of towns, villages and camps representative of the study rural area were purposefully selected from the Gezira Province according to the selection criteria.

3.3 Selection criteria:

The selection criteria included 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. Respondents selected from these areas interviewed and examined for periodontal diseases by the author.

3.4 Rural areas selection:

Five rural councils representing (50%) of the sample were selected purposefully, based on the above criteria. The five councils included El Housh, a heavily populated council including 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 to represent the eastern part of the province; this

council suffers serious shortage of health services institutions. Al Madina Arab to represent the southwestern part of the province, while Wad El Naeem council represents the middle part of the province. These areas were clustered as follows:

1. Areas with health facilities: These 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. Three areas of them were purposefully selected so as not to miss any institution providing oral health services. All patients attending the health institutions during the study period were interviewed and examined for periodontal diseases.

Three units from each council that includes many villages with health facilities were randomly selected using (the hat method). The random selection was limited to units without dental services. The final result was by this we had selected 15 areas. In all areas the health institutions were visited, all patients attending the clinics during the study period were interviewed and examined. All interviews and examinations were carried out by the author.

2. Areas without health facilities:

There were 293 areas without any kind of health facilities in the five selected councils. Ten percent (n = 30) of them were purposefully selected according to the selection criteria explained above. They were further clustered so as to select six areas in each council, of the three areas were randomly selected for subjects interview and periodontal diseases recording. Inhabitants of the areas were motivated calling is rough and mobile microphone to gather at certain selected area in the village or the camp to attend an oral health campaign.

Survey instruments to assess available resources:

The survey instrument included a precoded structured questionnaire, the WHO, basic oral health from.

Oral health situation analysis:

This part of investigation aimed to estimate periodontal diseases prevalence measured using the Periodontal Index (PI). The index components are: calculus, gingival bleeding and periodontal pockets depth. It was used to get estimation illustrating how much the tissues until the day of examination has become affected by periodontal diseases.

Statistical Analysis Methods:

The statistical analysis was done using descriptive statistics. Data with errors such as extreme values or outliers were removed from further analysis adjustment. Descriptive statistics was also used to check the data, health services description or community needs parameters. Chi squared test was used, as the data is binomial to assess if the periodontal diseases 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 proves and analyze the data and for clearing the data and check in variation and/or relation between variables.

Results

This study provides information on periodontal diseases in urban and rural clusters in Gezira Province. The study covered 34 study site settings.

Oral health behaviour

Table 1 shows the distribution of patients reported for dental care at the health institutions visited 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 of frequency 146 (32.6%).

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With respect to tooth brushing behaviour (n = 1412, 70.1%) of 201 subjects used to brush their teeth more than once.

Table 2 shows the level of satisfaction from the oral health services offered for 275 (61.4%) from rural settings were assessed the quality of services as poor compared to 18.4% of subjects from urban settings who graded the services offered as poor. Whereas only 78 (17.4%) of the rural subjects believed that the quality of services are either good or excellent.

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

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
Tooth brushing					
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) Distribution of Study Sample According to the Level of Satisfaction from the Oral Health Services

Residence	Urban n = 201		Rural n = 448		Total 100%
	N	%	N	%	
Satisfaction					
Satisfied	159	77.1	148	35.0	307
Unsatisfied	42	20.9	281	62.7	323
No answer	00	00	190	4.3	19
Level of satisfaction					
Poor	37	18.4	275	61.4	31.2
Fair	35	17.4	59	13.2	94
Good	96	14.8	320	7.1	128

Excellent	33	16.4	46	10.3	79
No answer	00	00	35	07.8	35

Table 3 shows the description of patients with periodontal diseases. Of the patients investigated seven (14.6%) received treatment in Wad Alneem council, two (4.4%) in Alhoush rural council, 19 (25.0%) in Al Madina Arab rural council, 10 (14.9%) in Hantoub where and 15 (16.9%) in Alhaj Abdalla rural council.

It was also realized that in Wad Medani City which represent the main urban setting in this investigation 22 (18.5%) of the investigated patients received oral hygiene instruction, 8 (6.7%) received both prophylaxis and oral hygiene instruction, 7 (5.9%) received periodontal therapy without instructions, while 6 (5.0%) received periodontal therapy and extraction. One patient (0.8%) had clearance of all teeth. Patients number 119 with periodontal disease 44 (39.9%) had periodontal treatment.

Table 3 Description of dental care for patients with gingivitis and periodontitis at the rural councils

	No. of patients treated or not treated			Types of treatment				
Description	No. of patients	No treatment	Treatment	OHI*	OHI& prophylaxis	Periodontal therapy only	Periodontal therapy + extraction	Clearance **
Councils frequency	N 100%	N %						
Wad Alneem (n=79)	48	41 85.4	7 14.6	2 4.2	3 6.3	1 2.1	00	1 2.1
Alhoush (n=69)	45	43 95.6	2 4.4	00	2 4.4	00	00	00
Almadina Arab(n=102)	76	57 75.0	19 25	3 3.9	1 1.3	7 9.2	6	2 2.6
Hantoub(n=91	67	57 85.1	10 14.9	9 13.4	1 1.5	00	00	00
Haj Abdalla (n=107)	89	74 83.1	15 16.9	3 3.4	10 11.2	2 2.3	00	00
Total (Rural) (n=448)	325	272	53 16.3	17 5.2	17 5.2	10 3,1	6 1.8	3 0.9

* OHI = Oral Hygiene Instruction
** Clearance refer to extraction of all teeth

Table 4 shows the periodontal indicators in Gezira Province. Presence of calculus was the predominant problem in both the urban and rural areas. Periodontitis is the least common disorder; it is 12.4% in Wad Medani and 13.1% in the rural council. The periodontal diseases show significant difference between urban and rural ($P < 0.0001$).

Table (4) Periodontal Indicators in the Gezira Province

Site	Total		Healthy		Calculus		Ginigivitis		Periodontitis	
	N	100%	N	%	N	%	N	%	N	%
Urban	201		89	44.3	41	20.3	46	22.8	25	12.4
Rural councils	448		123	27.5	149	33.3	117	26.1	59	13.1

Total	649		212		190		163		84	

Discussion

This study documens information on the current status of periodontal diseases prevalence and their management in Gezira province. The main findings showed that more females than males used the available dental facilities. These findings agree with WHO reports in Sudan as well as in many other countries (5). Females were more likely to seek oral health care compared to males. This may be because females have more periodontal diseases than men but it is most probably due to the fact that they are more likely to care about their appearance than males especially in urban areas. This finding was supported by previous report which showed that more females than males are affected with periodontal diseases (5). A report from Sudan indicated that there was more periodontal diseases prevalence among females than males (7). Tooth brushing behaviour was common among urban compared to rural populations. Increases awareness of the role of this behaviour in the maintenance of good oral hygiene in urban areas is expected. This observation was supported by previous reports, indicating the positive relationship between tooth brushing, high education and socioeconomic level. More females practice regular and frequent tooth brushing behaviour than males to maintain good oral hygiene (8,9). The results of the present study showed that utilization of health service was lower in rural than urban areas, due to unavailability, inaccessibility and cultural factors (7, 10 and 11). Patients at urban settings were more satisfied with services than at rural settings and that the overall quality of services is more likely to affect the level satisfaction (5).

In developed countries the situation is different as routine check up and/or provision of dental care were the main reasons for visiting a dental health unit (96%) (12). This is due to the availability of satisfactory appropriate dental services, high income and adequately trained personnel.

The present study revealed that the magnitude of periodontal diseases parameters such as the presence of calculus, gingivitis and periodontitis was more among rural compared in urban inhabitants in Gezira Province. These findings were supported by other studies in Sudan and elsewhere (5,6).

This study also documented that the provision of dental treatment and/or prophylaxis for gingivitis and/or periodontitis are more common in urban than rural areas. This could be explained by the relative availability, accessibility and affordability of health facilities and educational level. A higher proportion of population than that shown by this study was expected to make use of facilities available for treatment and/or prophylaxis of periodontal diseases. This may be due to several factors including the fact that periodontal diseases cause less gain compared to dental caries.

Conclusion

All the results of the present study showed a large magnitude of periodontal problems in Gezira faced with meager dental health services especially in rural areas and this may affect management of the diseases. Dental services where were investigated seem are lacking to preventive and promotive components. This study is meant to assemble and assess periodontal diseases, quality, quantity and distribution of its management. The available data revealed that the prevalent of periodontal diseases as indicated by the high PI index. A great effort is needed to reduce the periodontal diseases prevalence, using different approaches including curative and preventive means.

Recommendations

The concept of PHC to meet the goal of health for all should have a profound influence in reshaping approaches to the organization and management of oral health care. The essential elements of PHC to achieve this are:

1. Reinforcement of preventive oral health services addressing all population and specifically children, and the use of well baby clinics, and child nutrition

2. Development of standard preventive/curative care to cover most PHC facilities for proper assessment of periodontal diseases.

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