

# Dental Health Service in Gezira Locality, Sudan

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## Abstract

**Objectives:** This is a field survey aimed to assess the status of the present dental and oral health services at Gezira Locality. The facilities included were those in urban and rural areas including Wad Medani Dental Hospital, Wad Medani Military Hospital, El Gadaiea Health Centre and Marinjan Health Centre.

**Material and methods:** The study tools were direct pre-coded questionnaires, and a checklist. The procedure involved dental clinics to estimate the dental health services by assessing status of personnel, equipment and materials. A checklist was used to assess the personnel, equipment and instruments.

**Results:** Thirty study sites in the rural area were chosen from five study councils which included Alhosh, Wad Alnaeem, Alhag Abdalla, Almadina Arab and Hantoub. They comprise 418 towns, villages and camps, of these only 118 with health services. In these there are only 4 dental units, three of them were incomplete; all of them were operated by dental assistants, while the only complete unit was operated by a medical assistant. This result revealed absolute lack of dental services in rural areas. The present units are old and most of them were not functioning. This was the reason that most of rural population seeks oral health services for periodontal diseases and dental caries in Wad Medani health institutions. Most of the patients irrespective of their residence, preferred treatment at private dental clinics because they expect better care due to good facilities.

The results also revealed a poor level of oral health services reflected by the presence of a high level of decayed and missing component of DMFT.

**Conclusion:** It is concluded that there is poor provision of dental services in both quantity and quality at Gezira Locality. It recommended that the dental services in Gezira Locality have to be re-structured to improve their quantity, quality and efficiency.

**Keywords:** Dental health, Gezira, Sudan

## INTRODUCTION

The Gezira locality in central Sudan is 6000 km<sup>2</sup> in area with an estimated population of 1,757,265. It comprises 658 towns, villages and camps. The total number of dentists in the Gezira Locality are 14, with a dentists population ratio of 1:130,000.

Health services or health systems are defined as means for provision of services that include

preventive, curative, promotive and rehabilitative health care at primary, secondary or tertiary levels. This is achieved through provision of qualified human resources, space, auxiliary staff and medicaments. The end outcome of such services is to enable the people to lead a healthy life style.

Oral health services are primarily directed to prevent or eliminate oral diseases. Dental health

services vary in different parts of the world. The national income and the overall level of development of nations and the quality of dental care is reflected by high dentists\population ratio. It is of good quality in developed as compared to developing countries. In the UK the ratio of dentist/population was 1:2,100 in the year 2000. In the same year, in South Africa, a medium income country the ratio was 1:9,603. In India as an example of a low-income country, the ratio was 1:36,538, <sup>(1)</sup> while in the Sudan the ratio is 3 times lower (1:100,000) than in India. However, this ratio varies widely, from high in urban areas (1:30,000) compared to as low as 1:130,000 in rural areas Ghandour et al. <sup>(2)</sup>. The highest ratio was noted in Khartoum where, the total number of dentists was 274 and the number of chair- side assistants was 272 in the year 1994, according to WHO <sup>(1)</sup>.

The dentist/population ratio is a crude measure or indicator of the quantity of dental services, however, the quality of services is not affected by this ratio only, but by other factors such as, availability, accessibility, acceptability, type of dental equipment and dental materials available. Other factors may also affect both the quality and quantity of oral health services including, the type of health system, pattern of wealth distribution, political influences, capacity building, the level of population education and number of health professionals.

In Sudan eighty per cent of dental health services are found in urban areas, compared to 20% in rural areas. This distribution of services is not balanced with population distribution. Eighty percent of the population resides in rural areas, whereas up to 20% of population resides in urban areas.

The dental services in Gezira State, are similar to dental services elsewhere in Sudan, and are delivered through National or Private Health Service<sup>(3)</sup>. Regarding dental health professionals at within this State, at present, there are 26 dentists and 15 dental assistants in service. Thus the dentist/population ratio is 1:130,000. Most of the dentists are practicing in the capital city of the Gezira locality. Of these 23 dentists are working in the public health services, and the remaining 3 dentists are in full private dental health practice. This situation apparently indicates a serious shortage of dental manpower in this State. There

are other problems including shortage of dental equipment, instruments and other facilities required for the provision of dental care.

Oral and dental health services in the Gezira Locality are not well distributed because it is highly influenced by many factors, mainly the interventions of politicians, who demand that services be allocated at particular villages or towns.

### The objectives of this work are:

**General Objective:** To update information on the present status of oral health care delivered at Gezira Locality including physical facilities, human resources, and dental health professionals.

**Specific Objectives:** To identify level of satisfaction of people treated for oral and dental problems at urban and rural dental health institutions with regards to present status of oral health service, and to formulate strategy and policy for promoting dental health services aiming at achieving a good standard of oral health, and to propose appropriate oral health care facility(s) for the population of the Gezira Locality

## MATERIAL AND METHODS

### Study area and population:

The Gezira Locality; which is located at the centre of the Gezira State. Its central location makes it easily accessible for oral health services. Furthermore its high population density, strategic location and hosting the capital city of the stat, make it more or less representative of the whole state. For these reasons, this locality was purposefully selected to be the site for this investigation. Of the six Localities comprising Gezira State, the Gezira Locality is the largest, with respect to area and population. It is comprised of 12 rural councils, including a capital city; 'Wad Medani'.

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.

In the Gezira Locality there are many health institutions, in the total of 658 villages and camps (Annex 1). Of these there are 201 health institutions which have some form of health facilities, and the remaining 457 do not have any form of health facilities.

### Sampling:

The study areas were divided into two clusters:

**The Urban Cluster:** includes Wad Medani institutions that provide oral health services. They constitute two hospitals and two health centers. All 4 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, including 2 hospitals and 2 health centers.

**The Rural Clusters:** These comprise towns, villages and camps. Villages and camps representative of the study rural area were purposefully selected from the Gezira Locality according to the following criteria;

### Selection criteria:

First, 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.

### Rural areas selection:-

Five rural councils (50%) were selected purposefully, based on the above criteria. The 5 councils include 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 locality. Hantoub represents the eastern part of the locality, this council suffers serious shortage of health services institutions. Al Madina Arab this represents the southwestern part of the locality. While Wad El Naeem council represents the middle part of the locality.

### These areas were clustered as follows:-

#### *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 5 areas in each council, of these 3 areas were purposefully selected so as not to miss any institution providing oral health services.

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.

### Survey instruments to assess available resources:

The instruments included a checklist which was used to collect information on type of dental health services, equipment in selected oral health care institution and dental health professional, number of patients that visited the institution (Annex 2).

### Data analysis:

Data was analyzed by SPSS computer program.

## RESULTS

This study provides information on dental health services and assessment of the oral health situation in urban and rural clusters in Gezira Locality. The study covered 34 study site settings. The survey was carried out during the period from June 2004 to January 2006

### Oral health behaviour

Table 1 shows the distribution of the study sample according to residence. It is 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 approximately 43 (43.0%) in comparison to the number of patients from urban area; 57 (57.0%).

Table (2) shows the level of satisfaction; where 275 (61.4%) from rural settings were less satisfied with the services offered. They 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 3 shows the number of health institutions with or without dental services at different rural councils. There is only one health center with dental services in Wad Al Neem council, while dental services are provided at any rural hospital included in the study.

Table (4) shows the status of instruments and tools available at Wad Medani city dental health institutions. It is surprising that in Wad Medani Dental Hospital there are no instruments for orthodontic and even prosthesis and pedodontic instruments which are present are incomplete. In Maringan health centre which provides dental services, there is only a dental machine and chair.

Table (5) shows the equipment and instruments needed for oral health services at different rural councils, presented as complete, incomplete and unavailable. The table shows a very unexplained situation, regarding the presence of only one complete unit 'dental chair & dental machine' in Wad Alneem, whereas there is no trained dental personnel to use it. Other councils are with trained dental auxiliary staff but without suitable dental units. Regarding dental extraction instruments they are unavailable or incomplete in most study areas. For the periodontal instruments they are unavailable in all councils except El Housh and even here it is present in only one unit.

Table (6) shows the medical personnel and auxiliary staff running the health institutions at the rural councils. The table shows the maldistribution of staff, no single dentists covering the rural hospitals, all of them are stationed at Wad Medani City. The dental assistants are also very few covering only 10 % of studied rural areas while 6 of them are working in Wad Medani City. There are 6 medical officers covering only 20% of studied areas, offering only medical treatment and referring.

## DISCUSSION

Most of the patients irrespective of their urban or rural residence preferred treatment at hospitals to other public health institutions. This may be because health institutions other than hospitals have little facilities for provision of required health services. Utilization of private health facilities which is common in urban areas because private health service is not available in rural areas. Furthermore, the investigated population

were more satisfied with services provided by private health institutions than government health institutions. Because government health facilities provide only basic dental services such as tooth extraction and/or scaling.

Many studies concluded that utilization of health service is lower in rural than urban areas, due to unavailability, inaccessibility and cultural factors (4,2,5). Patients at urban settings were more satisfied with services provided than at rural settings and that overall quality of services affect level of satisfaction (6).

In developed countries the situation is different as routine check up and/or provision of oral hygiene therapy were the main reasons for visiting a dental health unit (96%). Whereas conservation treatment and/or extraction constituted only 10% (7). This is due to the availability of advanced dental services, high income and adequately trained human resources.

In Sudan, government dental services provide only limited emergency dental care such as tooth extraction and/or scaling, while other forms of dental care is provided in the private practice (8,2). It is very clear that in most developing countries health problems other than oral health receives more priority by the governments (9).

There are two main features of oral health care that are common to all countries, regions, and communities of the world. The first one is that they have some oral health services for meeting the needs of their population; the other, that these services are insufficient to fulfill these needs in the traditional curative, restorative, rehabilitative way (10).

WHO 2000 stated that the national income and overall level of development of nations and the quality of dental care as reflected by high dentist population ratio is good in developed as compared to developing countries (1).

In Gezira locality the dentist population ratio is 1:130,000 at this ratio is even far less in Gezira locality than in Medani city because all dentists are resident in Medani. This ratio when applied to Khartoum and all of the Sudan it becomes as low as 1:30,000 in Khartoum and other states 1:100,000 (2).

This study showed that coverage in Gezira is less than other parts of Sudan. This is due to high density of population of Gezira locality compared to any of the other localities. Out of 2665 dentists registered in Sudan Medical Council, only 50% are practicing in Sudan at the time of investigation, 90% of them are practicing in Khartoum<sup>(2)</sup>. Other countries showed better ratio such as India (low income) 1:36,000 (Medium income), South Africa 1:9,603 and (high income) United Kingdom 1:2,100, 1:6,666 in Middle East countries the ratio is better as it is in Saudi Arabia and 1:4,000 in Egypt. All this shows that the number of dentists is deficient in Sudan more than in any country except the neighbouring African countries which have similar ratios<sup>(1)</sup>.

Dental education in Sudan started in the year 1970. The uptake of the institution was small (20 in the 1st batch)<sup>(8)</sup>. This explains the low dentist-population ratio in Sudan at present. Dental health services in Sudan especially in rural areas rely on auxiliary staff due to lack of dentists. Each year 20-30 trained medical nurses are enrolled for a 2-year training programme to be qualified as dental assistants. Their main role is oral hygiene instructions, extraction, simple filling and extraction<sup>(8)</sup>.

The findings of this study documented deficient dental health services in Gezira, especially in rural areas. All elements for provision of standard dental health care, such as instruments, equipment and human resources are deficient.

Dental services located at Medani city are at a far distance to rural areas. This situation usually negatively affects utilization of these services. This finding was supported by a previous report by Ghandour et al<sup>(2)</sup> where "dental services are meager at primary health care level".

WHO 1989 stated that the main objective of primary dental care is to relieve acute pain of dental origin. The removal of a painful tooth does not require the service of a qualified dentist<sup>(11)</sup>. Even these simple services are not available to the vast majority of the population of Gezira locality.

European countries spend up to 7-10% of the national health budget on oral health services which means a lot of resources including service and manpower<sup>(12)</sup>. In Sudan there is a big gap in services in relation to national income.

## CONCLUSION

All stated results in this study showed a large magnitude of dental problems in Gezira faced with meager dental health services especially in rural areas and this affect utilization together with problem of accessibility and affordability. Dental services lack preventive and promotive components.

This study is meant to assemble and assess the quality, quantity and distribution of oral health services and health personnel, as well as the oral health status in Gezira locality. The available data revealed by this research show a low dentist-population ratio.

Effort and commitment from the state national and federal government is highly needed to promote oral health services

## RECOMMENDATIONS

There is an urgent need to construct a strategy; not a policy for comprehensive oral health care. Therefore, there is a need to determine the amount of oral health care needed, assess the level of present and future demand for oral care and formulate oral health facilities and their optimal utilization.

The following recommendations are suggested to make this plan feasible:

Development of standards and indicators for dental and oral health services to be used for assessment of services at different levels considering buildings, staff, equipment and materials.

The establishment of qualitative and quantitative manpower production goals, linked with national oral health goals, and based on dentist-population ratio, and implementation of extensive training courses to develop skills and knowledge.

The number of oral health auxiliary staff should carefully be considered, and the establishment of schools for dental assistant and other paramedical staff in the Gezira State is highly recommended.

Introduction of an effective and strong evaluating programme for promoting and improving oral health services through active oral health teams.

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