INTRODUCTION

The importance of oral health in relation to general well being of an individual cannot be over emphasized. Periodontal disease and dental caries are the commonest oral health problems experienced by the Nigerian population. Others include malocclusion, traumatized anterior teeth, dental fluorosis and oral tumours.

Dental caries (tooth decay) especially when left untreated can lead to serious health problems which may affect the quality of life of an individual. Consequences of neglect of dental diseases may include absenteeism from school and work thus leading to reduced productivity. In the United States of America alone, oral health related illnesses were reported to be responsible for 6.1million days of admission related ill health, 12.7 million days of restricted activities and 20.5million workdays lost each year. The sequelae of un-restored edentulous space resulting from pathologic exfoliation or extraction of teeth could have profound effect on individual's self confidence. It may also affect the individual’s choice of food thereby leading to weight loss and also may affect speech - a social handicap related to communication.

Maintaining good oral health from infancy to advanced old age is essential for overall well-being. Hence, the use of preventive dental health care services should be encouraged. The dental health professionals recommend a regular dental visit of once every 6 months, for maintenance of healthy gum and teeth. Many oral diseases present with early signs that could only be recognized by the professionals if individuals presented early. Therefore with regular dental care,
the possibility of keeping teeth throughout life is well within reach. Unfortunately previous studies conducted in countries such as Nigeria\(^6\), Burkina Faso\(^6\) and China\(^6\) all showed low utilization of dental services in their various reports. While “no perceived need” or “no serious dental problem” was common among reasons for non utilization in some of these reports\(^6\), emergency dental visits were the patterns reported among most of the utilizers \(^6\). Problem driven dental visiting habits had resulted into unwanted outcomes such as various complications due to late presentation, limited treatment options and even affected treatment outcomes for some patients\(^8\),\(^10\),\(^11\).

Civil Servants constitute a major proportion of workforce in Nigeria. A wide range of professional and non-professional qualifications, educational attainments with various ethnic and religious backgrounds can be found within the civil service.

Therefore as a community of Nigerian workforce, information regarding dental health care and services among them may reveal the situation of the same in the larger community. The workers’ optimal oral health and wellbeing is integral to their optimal general health and well being and this translates to their economic productivity. There is need therefore, to ascertain their rate, pattern and attitude towards regular utilization of dental services as a baseline to plan appropriate oral health care intervention for them. More so, previous studies\(^6\),\(^9\) on utilization of dental services has focused on hospital outpatients and household surveys alone. Scarcity information exists on this subject among Nigerian workers. Such gaps in knowledge when bridged may help to guide the content development of tailored public health programmes about the use of appropriate preventive dental health care services.

**MATERIALS AND METHODS**

The study was conducted among the federal civil servants in the Federal Civil Service Secretariat, Ikolaba, Ibadan, Oyo State, Nigeria. The secretariat serves as an office complex for ministries, agencies and parastatals of the Federal Government of Nigeria, South West region which were about 23 altogether. The required sample size was determined based on a precision of 0.05 and a prevalence of 26% from a previous study in Benin city, Nigeria\(^8\) to obtain a minimum of 296 participants.

A multi-stage sampling technique was used to select participants. For a fairer representation, the 23 ministries in the secretariat were divided into 3 groups according to their gross functions, these are; Health related, Works/Infrastructural development related and Education/Human development related groups. Each group then had 7, 8, and 8 ministries respectively. Using simple random sampling technique, 2 ministries each were selected from the 3 groups to obtain 6 ministries in all. Final selection of the people to be interviewed in the study was done by cluster sampling of each of the 6 ministries. All workers in these ministries/parastatals (irrespective of cadre) present at the time of data collection were enrolled for the study. The selected ministries were: Ministry of Information and Culture, National Directorate of Employment, National Agency for Food Drug Administration and Control, Ministry of Education, Ministry of Health and Ministry of Works.

Ethical approval for the study was obtained from the UI/UCH Institutional Review Committee. Written approvals were obtained from the heads of concerned ministries/parastatals and written informed consent was given by each participant.

Incentives introduced included free dental consultation and free treatment such as scaling and polishing and extraction where necessary. Thirty-six respondents benefitted from scaling and polishing while 9 teeth were extracted. A pretest of the questionnaire was carried out among the state civil servants in Oyo State Civil Service Secretariat.

The questionnaire was divided into 3 sections: Section A, had the socio demographic variables which included their educational level and grade levels of income; Section B – Awareness of dental health care and services questions which included; meaning of dental health care, dentists’ role in health care delivery and the kind of services dentists render. Section C - Attitudes towards regular utilization of dental services. Responses on awareness questions and that of attitude towards regular utilization of dental services were computed over a maximum of 10 and 20 points respectively. Awareness scores \(<5\) and \(\geq5\) were considered poorly informed and well informed respectively. Attitude scores \(<9\) and \(\geq10\) were considered negative and positive respectively. Chi-square test was used to test associations between categorical variables at 5% level of significance.

**RESULTS**

**Socio-demographic characteristics**

A total of 412 civil servants were available at the time of data collection of which 400 consented to participate in the study and were included (response rate = 97.1%). The sample comprised 207 (51.8%) males and 193 (48.3%) females. Their ages ranged
between 25 and 61 years of age with a mean age of 44.0±7.3 years. Two hundred and forty three (60.8%) of them attained more than a secondary education, 109 (27.2%) had secondary education as their highest level of educational attainment, while the rest attained less than a secondary education. In terms of civil service levels, 31 (7.8%) of them belonged to the levels 13 and above income class category, 212 (53.0%) of them were in the levels 7 – 12 income class, while the rest 157 (39.2%) were in the levels 1 – 6 income class category (Table 1).

### Awareness of dental health care and services

The majority 291 (72.8%) of the respondents were well informed about dental health care and services. Being well aware of dental health care and services was found to increase with higher level of income, education, having ever utilized a dental service and a positive attitude towards a regular utilization (p<0.01 each; Table 2).

### Utilization of dental services

Only 156 (39.0%) of them had ever utilized a dental service. Of these, 17 (10.9%) of them utilized dental services routinely for regular checks, while a total of 103 (66.0%) utilized dental care services solely for acute pain relief. Twenty one (13.5%) visited for teeth replacement, 5 (3.2%) for tooth discoloration, 2 (1.3%) for bad breath and 1 (0.6%) for bleeding gum. Thirty two (32.1%) of the dental service utilizers, visited a dental facility in the previous year, while the majority 124 (79.5%) of them utilized a dental facility in over a year period prior to this study. Commonest reason given by previous utilizers 71 (45.5%) for not honoring

### Table 1: Socio-demographic characteristics of the respondents.

| Age group (Years) | Total respondents | Percentage |
|-------------------|------------------|------------|
| < 30              | 22               | 5.5        |
| 31 – 40           | 111              | 27.7       |
| 41 – 50           | 197              | 49.3       |
| ≥51               | 70               | 17.5       |

| Sex              | Total (100%) |
|------------------|--------------|
| Male             | 207          | 51.8       |
| Female           | 193          | 48.2       |

| Educational level | Total respondents | Percentage |
|-------------------|-------------------|------------|
| None              | 3                 | 0.8        |
| 1° edu            | 48                | 12.0       |
| 2° edu            | 109               | 27.2       |
| >2° edu           | 243               | 60.8       |

| SES by grade level of income | Total respondents | Percentage |
|------------------------------|-------------------|------------|
| 1 - 6                        | 157               | 39.2       |
| 7 - 12                       | 212               | 53.0       |
| ≥13                          | 31                | 7.8        |

### Table 2: Association between of Awareness of dental services and some variables.

| SES by grade level of income | Poorly Informed (%) | Well Informed (%) | Total (100%) | P-value |
|------------------------------|---------------------|-------------------|--------------|---------|
| 1 – 6                        | 56 (35.7)           | 101 (64.3)        | 157          | P = 0.003* |
| 7 – 12                       | 50 (23.6)           | 162 (76.4)        | 212          |         |
| ≥13                          | 3 (9.7)             | 28 (90.3)         | 31           |         |

| Educational sta              | Poorly Informed (%) | Well Informed (%) | Total (100%) | P-value |
|------------------------------|---------------------|-------------------|--------------|---------|
| ≤1° edu                      | 27 (56.2)           | 21 (43.8)         | 48           |         |
| >2° edu                      | 53 (48.6)           | 56 (51.4)         | 109          |         |

| Attitude                     | Poorly Informed (%) | Well Informed (%) | Total (100%) | P-value |
|------------------------------|---------------------|-------------------|--------------|---------|
| -ve                          | 41 (46.6)           | 47 (53.4)         | 88           |         |
| +ve                          | 68 (21.8)           | 244 (78.2)        | 312          | P = 0.000* |

| Utilization                  | Poorly Informed (%) | Well Informed (%) | Total (100%) | P-value |
|------------------------------|---------------------|-------------------|--------------|---------|
| Yes                          | 21 (13.5)           | 135 (86.5)        | 156          | P = 0.000* |
| No                           | 88 (36.1)           | 156 (63.9)        | 244          |         |

| Age group                    | Poorly Informed (%) | Well Informed (%) | Total (100%) | P-value |
|------------------------------|---------------------|-------------------|--------------|---------|
| ≤ 30                         | 3 (13.6)            | 19 (86.4)         | 22           |         |
| 31 – 40                      | 40 (36.0)           | 71 (64.0)         | 111          |         |
| 41 – 50                      | 51 (25.9)           | 146 (74.1)        | 197          |         |
| ≥51                          | 15 (21.4)           | 55 (78.6)         | 70           | P = 0.270 |

| Total                        | 109 (27.2)          | 291 (72.8)        | 400          |         |

* - statistically significant; -ve –negative; +ve- positive
Table 3: Utilization of dental services and reasons for use and non-use among respondents

| Last dental visit                  | No. of respondents | Percentage |
|------------------------------------|--------------------|------------|
| Within the last one year           | 32                 | 20.5       |
| More than one year ago             | 124                | 79.5       |

**Reason for use of dental service facility by time of use**

- Examination, Prevention (Routine scaling and polishing) | 17 | 10.9 |
- Acute pain relief (toothache/tooth sensitivity) | 103 | 66.0 |
- Bleeding gums | 1 | 0.6 |
- Bad breath | 2 | 1.3 |
- Tooth discoloration | 5 | 3.2 |
- Teeth replacement | 21 | 13.5 |
- Other dental problems | 5 | 3.2 |
- More than one dental problem | 2 | 1.3 |

**Reason for non use by previous utilizers**

- It has become too expensive | 27 | 17.3 |
- Acute pain relief (toothache/tooth sensitivity) | 25 | 16.0 |
- I don’t see any need to/ I am fine. | 71 | 45.5 |
- I had a bad experience last time | 23 | 14.8 |
- Not yet time for my next appointment | 2 | 1.3 |
- Others specify | 8 | 5.1 |

**Total** | 156 | 100.00 |

**Reasons for never utilizing a dental care service**

- It’s too expensive | 13 | 5.3 |
- I don’t have any serious dental/oral problems | 202 | 82.8 |
- Fear of the sight of instruments | 11 | 4.5 |
- No time | 3 | 1.2 |
- Complex hospital routine | 7 | 3.0 |
- Other reasons | 4 | 1.6 |
- More than one reason | 4 | 1.6 |

**Total** | 244 | 100 |

Table 4: Association between Utilization of dental services and selected variables (N = 400)

| Age group | Utilized n (%) | Never Utilized n (%) | Total (100%) | P-value |
|-----------|----------------|----------------------|--------------|---------|
| ≤ 30      | 7 (31.8)       | 15 (68.2)            | 22           |         |
| 31 – 40   | 35 (31.5)      | 76 (68.5)            | 111          |         |
| 41 – 50   | 74 (37.6)      | 123 (62.4)           | 197          |         |
| ≥ 51      | 40 (57.1)      | 30 (42.9)            | 70           | P = 0.005* |
| Sex       |                |                      |              |         |
| Male      | 76 (36.7)      | 13 (63.3)            | 207          |         |
| Female    | 80 (41.5)      | 113 (58.5)           | 193          | P = 0.193 |
| Marital status |         |                      |              |         |
| Not married | 16 (43.2)    | 21 (56.8)            | 37           |         |
| Married   | 140 (38.6)     | 223 (61.4)           | 363          | P = 0.349 |
| Ethnic group |            |                      |              |         |
| Yoruba   | 132 (38.6)     | 210 (61.4)           | 342          |         |
| Others   | 24 (41.4)      | 34 (58.6)            | 58           | P = 0.396 |
| Educational stat |          |                      |              |         |
| ≤1°edu    | 16 (33.3)      | 32 (66.7)            | 48           |         |
| >2°edu   | 42 (38.5)      | 67 (61.5)            | 109          |         |
| SES by grade level of income |          |                      |              |         |
| 1 – 6     | 44 (28.0)      | 113 (72.0)           | 157          |         |
| 7 – 12    | 95 (44.8)      | 117 (55.2)           | 212          |         |
| ≥ 13      | 17 (54.8)      | 14 (45.2)            | 31           | P = 0.001 |
| Awareness |                |                      |              |         |
| Poorly Inf | 21 (19.3)    | 88 (80.7)            | 109          |         |
| Well Inf  | 135 (46.4)     | 156 (53.6)           | 291          | P = 0.000* |
| Attitude  |                |                      |              |         |
| -ve       | 27 (30.7)      | 61 (69.3)            | 88           |         |
| +ve       | 129 (41.3)     | 183 (58.7)           | 312          | P = 0.045* |

* - statistically significant; ÷² - chi square test statistic; stat – statistics; Exact – Fisher’s exact test
a subsequent appointment was “I don’t see any need to”, while the commonest reason for having never utilized a dental service among the non-utilizers 202 (82.8%) was “I don’t have any serious dental problem” (Table 3).

Dental visits increased with improved level of income and being well aware of dental health care and services (all p<0.05). Females utilized dental services better than their male counterparts, though the association was not statistically significant (Table 4).

**Attitudes towards regular utilization of dental services**

A total of 312 (78.00%) respondents had a positive attitude towards regular utilization of dental services. Positive attitude improved with higher educational attainment, improved level of income, being well aware of dental health care and services and having ever utilized it (all p<0.05; Table 5).

**DISCUSSION**

Numerous studies conducted in many parts of the world [6, 8, 9, 12-15] showed that dental services were poorly sought after. Correspondingly, the rate of utilization of dental services among the participants in this study was found to be low. An African study had blamed the observable poor dental visiting habits on the fact that they generally pay less attention to oral health when compared with the health of any other parts of the body among other reasons [12]. This fact may hold true for many participants in this study.

In developed countries like US and UK, preventive dental health care seeking behavior is highly in practice. Reports showed that about 40 to 80% of adults in these countries would have visited a dentist within one year period and not necessarily for symptomatic reasons [16-18]. This is not the case with the findings in this study as only one out of five participants utilized a dental care within one year period and that the purpose for visitations was largely problem driven. Emergency dental health care seeking behavior was the trend in dental service utilization observed also in reports from studies conducted in other countries such as China [8], Burkina Faso [12], Ivory Coast [13] and South Africa [19]. The target was usually a relief of symptom. A major factor identified as determining the need to

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**Table 5: Association between Attitude to regular dental service utilization and some variables.**

| Age group | Negative Att (%) | Positive Att (%) | Total (100%) | P-value |
|-----------|------------------|------------------|--------------|---------|
| ≤ 30      | 5 (22.7)         | 17 (77.3)        | 22           |         |
| 31 – 40   | 25 (22.5)        | 86 (77.5)        | 111          |         |
| 41 – 50   | 42 (21.3)        | 155 (78.7)       | 197          |         |
| ≥ 51      | 16 (22.9)        | 54 (77.1)        | 70           | P = 0.991 |

**Sex:**

|          | Negative Att (%) | Positive Att (%) | Total (100%) | P-value |
|----------|------------------|------------------|--------------|---------|
| Male     | 44 (21.3)        | 163 (78.7)       | 207          |         |
| Female   | 44 (22.8)        | 149 (77.2)       | 193          | P = 0.401 |

**Edu stat:**

|        | Negative Att (%) | Positive Att (%) | Total (100%) | P-value |
|--------|------------------|------------------|--------------|---------|
| 1° & < | 21 (43.8)        | 27 (56.2)        | 48           |         |
| 2° edu | 36 (33.0)        | 73 (67.0)        | 109          |         |
| >2° edu| 31 (12.8)        | 212 (87.2)       | 243          | P = 0.000* |

**SES by grade level of income**

|        | Negative Att (%) | Positive Att (%) | Total (100%) | P-value |
|--------|------------------|------------------|--------------|---------|
| 1 – 6  | 46 (29.3)        | 111 (70.7)       | 157          |         |
| 7 – 12 | 39 (18.4)        | 173 (81.6)       | 212          |         |
| ≥ 13   | 3 (9.7)          | 28 (90.3)        | 31           | P = 0.010* |

**Awareness**

|        | Negative Att (%) | Positive Att (%) | Total (100%) | P-value |
|--------|------------------|------------------|--------------|---------|
| Poorly Inf | 41 (37.6) | 68 (62.4) | 109 |         |
| Well Inf   | 47 (16.2)       | 244 (83.8)       | 291          | P = 0.000* |

**Utilization**

|        | Negative Att (%) | Positive Att (%) | Total (100%) | P-value |
|--------|------------------|------------------|--------------|---------|
| Yes    | 27 (17.3)        | 129 (82.7)       | 156          |         |
| No     | 61 (25.0)        | 183 (75.0)       | 244          | P = 0.045* |

**Total**

|        | Negative Att (%) | Positive Att (%) | Total (100%) | P-value |
|--------|------------------|------------------|--------------|---------|
|        | 88 (22.0)        | 312 (78.0)       | 400          |         |

* - statistically significant; ÷² - chi square test statistic; Exact – Fisher’s exact test
seek dental care among participants in these studies was self-assessment of oral health state. Perhaps ignorance on the importance of oral health care and general poverty which is notable in developing countries have both contributed in no small measure to the poor dental visiting habits observed.

Oral health problems are common, costly and painful. Fortunately most of them are largely preventable. This is why maintenance of wellbeing both orally and of every other part of the body is an individual responsibility and is irrespective of age, gender or level of income. According to some researchers, an individual's eventual choice of oral health care whether of an orthodox service, traditional or self medication was dependent on information available to him, his attitude, self perceived oral health care need and the financial resources available to him. It was suggested from the same studies that individuals with higher income level and education utilized dental services more. Similarly civil servants in this study with higher level of income and education utilized dental services better (p< 0.01). Gender however, did not show any significant association with utilization of dental services.

Despite the high awareness level of oral health care and services demonstrated by the civil servants, utilization of preventive dental services was quite low. Good knowledge of the importance oral health care and dental services available shown by those with higher literacy may have been from exposures in formal settings. Furthermore, good knowledge of dental services observed among participants in the older age group was largely so because there is a likelihood for an increase in demand for dental care services with increasing age due to age related changes. For this reason, the knowledge of dental care services among the higher age group is expected to be higher than that of the lower age group category, though the association was not statistically significant.

Wrightman's in 1965 postulated that, "what people say is not necessarily a guide to what they will do or what they do and that opinions and actions are influenced by a different set of antecedent and situational variables". This may explain the lack of correlation between the largely positive attitude shown by the participants in this study towards regular dental service utilization and their actual utilization of the services. An individual's willingness to seek health is not only influenced by attitudes and knowledge about health care alone, but also by other factors such as; the social and cultural definitions of health and illness that has been learnt by them. Moreover, "perceived severity of symptoms" was identified as an essential determinant of whether to seek treatment among some Africans. Undoubtedly, decision to utilize dental services among the participants in this study may have been influenced by some of these factors. These are probable explanations for the observed lack of correlation.

The remarkable level of knowledge for oral health care and services demonstrated by participants in this study was not reflected in the type of importance placed on their oral health in terms of use of preventive dental services. This strengthens the fact that knowledge gain alone rarely leads to sustained changes in behavior. In addition to the lack of understanding of benefits of good oral health, competing financial needs was also identified as responsible for the worsening oral health access disparities among participants in a study conducted among the disadvantaged in United States of America. Perhaps the aforementioned are factors that should be considered in future studies on access to oral health care among the same group.

A rather disturbing phenomenon “no serious dental problem” was the participants’ usual disposition, once a relief of dental symptom was achieved. This unfortunately was the explanation given as reason why many of the utilizers would not honour a subsequent dental visit appointment. A similar response was reported from a study conducted among workers in South Australia. Ignorance about the importance of preventive dental health underscores the urgent need for preventive dental health care educational and promotional programmes among the civil servants. Avoidance of subsequent dental visits may lead to progression of existing dental problems such as caries or periodontal disease and often makes it difficult to detect the onset of new dental problems early. For example, diseases such as oral cancer are often detected early if individuals utilize dental services regularly.

LIMITATIONS
The findings in this study are subject to some limitations. First, data on utilization of dental services was self-reported, caution should therefore be exercised in generalising the findings to all civil servants in Nigeria. Second, the cross-sectional design precludes causal inferences and only associations can be drawn. However this study was able to provide some baseline information that can be used to plan appropriate oral health intervention programmes and other future studies among the study group.

CONCLUSION
Though the participants were well informed about dental health care and services and their attitude towards a regular utilization of these services were
largely positive. Utilization of dental services among them was low, episodic and problem driven rather than preventive.

**RECOMMENDATION**

Public health dentists should collaborate with government agencies in providing programmes that are tailored towards behavior change appropriate for effective utilization of preventive dental services for the civil servants.

**REFERENCES**

1. Akpata ES. Oral health in Nigeria. Int Dent. J, 2004; 54: 361-366.
2. Oral health in America. A report of the Surgeon General. (http://surgeon_general.gov/library/oralhealth/website. (Accessed July, 2013).
3. Petersen PE, Yamamoto T. Improving the oral health of older people: the approach the WHO Global Oral Health Program. Community. Dent. Oral. Epidemiol; 33: 81-92.
4. Smith JM, Sheiham A. (1979). How dental conditions handicap the elderly. Community. Dent. Oral. Epidemiol 1979; 7: 305-310.
5. Jones CL, Milsom KM, Rateliffe P, et al. Clinical Outcomes of Single-Visit Oral Prophylaxis: A practice based Randomized Control Trial. BMC Oral Health 2011; 11: 35. (http://www.biomedcentral.com).
6. Okunseri C, Born D, Chattopadhyay A. Self reported visits among adults in Benin City, Nigeria. Int. Dent. J. 2004; 54(6): 450–456.
7. Adegbembo A.D. Household utilization of dental services in Ibadan, Nigeria. Community Dent. Oral Epidemiol. 1994; 22: 338-339.
8. Varene B, Petersen PE, Fournet P et al. Illness-related behaviour and utilization of oral health services among adult city-dwellers in Burkina Faso: evidence from a household survey. Burkina Faso. BMC Health Services Research. 2006; 6: 164.
9. Lo EC, Lin HC, Wang ZJ et al. Utilization of dental services in Southern China. J. Deut. Res. 2001; 80 (5): 1471–1474.
10. Adebayo ET, Ajike SO. Report of six cases of metastatic jaw tumours in Nigerians. Nig J. Surg. Res. 2004; 6 (1-2): 30-33.
11. Suhad H, Al-Jundi. Type of treatment, prognosis and estimation of time spent to manage dental trauma in late presentation cases at dental teaching hospital: a longitudinal and retrospective study. Dental. Traumatology, 2004; 20(1): 1-5.
12. Varene B, Petersen PE, Ouattara S. Oral health behaviour of children and adults in urban and rural areas of Burkina Faso, Africa. Int. Dent. Journal, 2006; 56: 61-70.
13. Samba M, Guinan JC, Sangare A et al. Oral Health Care Practices in Abidjan. Odontostomatol. Trop 2004; 27(107): 37-40.
14. Okunseri C, Chattopadhyay A, Lugo R, Ivan McGrath C. Pilot survey of oral health related quality of life: a cross sectional study of adults in Benin city, Edo State, Nigeria. BMC. Oral. Health, 2005; 5: 7-14.
15. Adiko EF, Assi KD, Djaha K et al. Current dental practice in Ivory Coast. Study of population attitudes to oral health and oral health services. Odontostomatol. Trop. 1990; 13(1): 29-33.
16. Peterson PE. Holst, D. Utilization of dental services. In Cohen Lk and Gft HC, (editors). Disease prevention and oral health promotion: Socio-dental sciences in Action Copenhagen: Munskgaard, 1995; 341-386.
17. Chen M, Anderson RM, Barmes DE et al. Comparing oral health care systems. A second international collaborative study. Geneva. 1997 WHO/ORH/ICSII/97.1.
18. Kiyak HA, Reichmuth M. Barriers to and enablers of older adults use of dental services. J. Dent. Edu. 2005; 69: 975-986.
19. Westaway MS, Viljoen E, Rudolph MJ. Utilization of oral health services, oral health needs and oral health status in a peri-urban informal settlement SADJ. 1999; 54: 149-152.
20. Oral health. At a glance 2009: Preventing cavities, gum disease, and tooth loss. National Center for chronic disease prevention and health promotion. Department of Health and Human Services. CDC. (www.cdc.gov/nccdphp/publication/aag/pdf/doh.pdf). Accessed July, 2014.
21. Lee W, Kim SJ, Albert JM, Nelson S. Community factors predicting dental care utilization among older adults. J AM Dent. Assoc. 2014: 145(2): 150-158.
22. Cunningham PJ, Cornelius IJ. Access to ambulatory care for American Indians and Alaska Natives; the relative importance of personal and community resources. Soc Sci Med. 1995; 40: 393-407.
23. Petersen PE. Oral health in Ageing societies: integration of oral health and general health World Health organization. 2008. www.who.int/oral_health/events/oral%20health%20report%202.pdf. (Accessed October, 2013).
24. Wrightman LS. Characteristics of positively scored and negatively scored items from attitude scales. Psychol Rep, 1965; 171(3): 898.
25. McKinley JB. Some approaches and problems in the study of the use of services - an overview. Hlth Soc Behav. 1972; 13: 115-152.
26. **Aday LA**, Andersen RM. Development of indices of access to medical care. Ann Arbor: Health Administration Press. 1975; 334 – 335.

27. **Sprod A**, Anderson R, Treasure E. Effective oral health promotion literature review. Cardiff: Health promotion Wales 1996; Technical Report 20.

28. **Vargas CM**, Ronzio CR. Disparities in Early childhood caries. BMC Oral Health 2006; 6 (Suppl 1):S3. doi:10.1186/1472-6831-6-S1-S3.

29. **Srikandi TW**, Carey SE, Clarke NG. Utilization of dental services and its relation to the periodontal status in a group of South Australian employees. Comm. Dent. & Oral Epidemiol. 1983; 11(2): 90 – 94.