

A PILOT TRIAL OF THE IMPACT OF FINANCIAL INCENTIVE ON THE UTILIZATION OF DENTAL SERVICES AMONG CIVIL SERVANTS IN IBADAN, NIGERIA

O.T. Alade¹ and F.B. Lawal²

1. Department of Preventive Dentistry, College of Medicine University of Lagos, Lagos
2. Department of Periodontology and Community Dentistry, University of Ibadan and University College Hospital, Ibadan

Correspondence:

Dr. O.T. Alade

Department of Preventive Dentistry,
College of Medicine,
University of Lagos,
Lagos, Nigeria.
E-mail: lolalade@live.com

ABSTRACT

Background: Financial constraints have been reported as major barriers to utilization of dental services in developing countries. It is however unknown if financial incentives will improve dental service utilization among civil servants in Nigeria.

Objective: To evaluate the effect of financial incentive on the utilization of dental services among civil servants in Ibadan, Nigeria.

Methods: This was a pilot trial among two clusters of civil servants in Ibadan, Nigeria. In both groups, the civil servants participated in an oral health education programme, a dental screening exercise and referral for dental treatment. In addition to this, the experimental group got a financial incentive to present for treatment. The two groups were followed up for a period of twelve weeks. Data were analysed using SPSS.

Results: A total of 109 civil servants participated in the study. There were 62 in the control group and 47 in the experimental group. The mean age of the study participants in the control group was 42.1 ± 8.75 years, mean DMFT was 0.95 ± 1.87 and 94% of them had an unmet dental need. Similarly, in the experimental group the mean age was 44.7 ± 11.68 years, mean DMFT was 0.45 ± 0.95 and 98% of them had an unmet need. There was no significant difference between the two groups at baseline. At twelve weeks, none of those referred for treatment in the control group presented for treatment while only 3 (6.4%) experimental group presented for dental treatment. No statistical difference was observed ($p=0.077$).

Conclusion: In this study financial incentive did not result in significant increased utilization of dental care services among adults.

Keywords: Dental service utilization, Civil servants, Financial incentive

INTRODUCTION

Oral health has assumed increasing importance because it is now recognized as necessary for general health. One factor that determines good oral health is the appropriate and timely use of preventive and curative dental services. Attaining and maintaining good oral health is particularly pertinent for the working population because these diseases and their sequelae decrease their productivity.¹ However, several factors preclude the use of dental services including unperceived need and inadequate finances.^{2,3}

Predisposing factors, enabling factors and need predict the utilization of healthcare services.⁴ Studies show that the best predictor of dental service use is patient need. In Nigeria, many of the studied populations have been noted to have unmet dental needs.² Despite this, many do not seek dental care until complications have set

in.⁵ Other contributing factors such as financial constraints may be important in view of the economic challenges in the country. In addition, payment schemes for financing dental care such as insurance is limited.⁶ Out of pocket expenditure is the major type of dental care financing in Nigeria.^{6,7} Therefore, the Nigerian citizen bears the brunt of health care costs with over 95% of private expenditure on health being out of pocket. Furthermore, the National Health Insurance Scheme in the country serves only about 3% of Nigerians⁸ and somewhat predictably, dental services are secondary level services in this insurance scheme. Therefore, non-life threatening dental need may be overshadowed by more pressing demands such as need for food, housing, transport and medical care.

In view of these, financial constraint may be an important factor affecting dental care seeking behavior in our environment. As such, financial incentive is expected to remove one of the barriers to accessing dental care and enable people with dental need demand for care.⁹ The aim of this study was to evaluate the impact of financial incentive on the utilization of dental services among civil servants in Ibadan, Nigeria.

METHODOLOGY

Study Area

Ibadan is an ancient town in Oyo State, Nigeria. There are five local government areas (LGA) in Ibadan city. These are Ibadan North, North-West, North-East, South-East and South-West LGAs. The study was conducted in the two local government secretariats of Ibadan North and Ibadan North-West LGAs.

Study Design

This pilot trial was a randomized controlled study to evaluate the effect of financial incentive on the utilization of dental services among civil servants in Ibadan, Nigeria. Two local government secretariats of Ibadan North and Ibadan North-West LGAs, were purposively selected for the study. They were then randomized into control and experimental groups using sealed envelopes.

Study Population

The staff of Ibadan North and Ibadan North West local government secretariats. These are local government workers of all cadres.

Sampling and Subject Selection

All staff at both LGA secretariats were invited to participate in a one-day oral health outreach programme held at each local government secretariat. The oral health outreach programme comprised oral health education, screening for oral diseases and referral to the same primary oral health clinic. Those who participated in the oral health outreach programme and consented to take part in the study were recruited to take part in this pilot trial.

Intervention

Both trial arms received oral health education on the respective days of their oral health outreach programmes. This oral health education was presented in a group session at the beginning of the one-day oral health outreach programme. It focused on the importance of oral health and need to utilize dental services early for preventive and curative reasons. It was a 20-minute power point presentation delivered by the same pre-trained dentist in both LGA secretariats. This presentation was followed by a 15-minute answer and question session in both secretariats.

Following the oral health education, each participant was screened for oral diseases by an intra-oral examination. They were then referred for treatment where appropriate. In addition, the study participants in the experimental group were informed that they would get a financial incentive in form of 50% reduction of the costs of their treatments if they presented at the clinic within twelve weeks.

Data Collection

A pro-forma was used to collect the participants' sociodemographic data. The intra-oral examination was conducted according to the World Health Organization (2013) guidelines.¹⁰ This intra-oral examination was conducted by the same examiners (four pre-trained and calibrated dentists) in both groups. The outcome of interest was attendance at the primary oral health clinic within the stipulated twelve weeks. This was determined by an independent person, blinded to the group's allocation, who checked the registration records at the Primary Oral Health Clinic against the participants' registration record at the oral health campaigns.

Data Analysis

Data obtained were analyzed with Statistical package for Social Sciences (SPSS) version 23. Means and standard deviations were used to summarize continuous variables and categorical variables were presented in proportions. Chi square test was used to compare the outcome between the 2 groups. Statistical level of significance was set at $p < 5\%$.

RESULTS

A total of 109 civil servants were recruited into the trial, 62 of them in the control group and the remaining 47 in the experimental group.

Overall the age of the participants ranged from 21 to 70 years (mean 43.2 ± 10.14). The majority of the participants were females (75.2%) and the rest were males. Most of them were married (82.6%), 11.9% were single and the remaining (5.5%) were widowed or divorced. Eighty-four (77.1%) had post-secondary school education. Only, forty-four (40.4%) had ever visited the dentist. Following the screening exercise, 104 (95.4%) were found to have at least one dental treatment need.

Among the participants in the control group, the age range was 21 to 59 years while in the experimental group, it ranged from 26 to 70 years. Table 1 shows that there was no significant difference in the mean ages of the 2 groups ($p = 0.19$). Similarly, there was no significant difference in the proportions of the

Table 1: Baseline characteristics of participants in the 2 local government secretariats (n= 109)

	Ibadan North LG secretariat (Control Group)	Ibadan North West LG secretariat (Experimental Group)	p-value
N	62	47	
Mean Age (years)	42.1 ± 8.75	44.7 ± 11.68	0.19
Gender			
Male	14 (22.6%)	13 (27.7%)	0.54
Female	48 (77.4%)	34 (72.3%)	
Mean DMF	0.95±1.87	0.45±0.95	
Marital Status			
Single	8 (12.9%)	5(10.6%)	
Married	51(82.3%)	39(83.0%)	0.89
Widowed or Divorced	3(4.8%)	3(6.4%)	
Educational Status*			
Secondary School Completed or Less	4 (6.5%)	12 (25.5%)	0.005#
Post-Secondary School Completed	54 (87.1%)	30 (63.8%)	
Previous Dental Visit	28 (45.9%)	16 (34.0%)	0.21
Yes			
No			
Treatment Need	58 (93.5%)	46 (97.9%)	0.29
Yes			
No			

* missing data among Educational Status

Statistically significant

participants by gender and marital status ($p = 0.54$, 0.89 respectively) (Table 1).

However, with 87.1% of the civil servants in the control group reporting that they completed post-secondary education and only 63.8% of those in the experimental group reporting same, there was a significant difference in the educational status of the 2 groups, $p = 0.005$ (Table 1). Table 1 also shows that previous dental visit and treatment need across the 2 groups were similar, $p = 0.21$ and 0.29 respectively.

Table 2: Contingency Table of Financial Incentive by Dental Service Utilization among 109 civil servants in two Local Government Secretariats in Ibadan, Nigeria

Financial Incentive	Dental Service Utilization		Total
	Yes	No	
Yes	3	44	47
No	0	62	62
Total	3	106	109

Fisher's Exact Test = 0.077

The DMFT scores across the 2 groups ranged from 0 to 8 in the control group and from 0 to 4 in the experimental group with a significant caries index of 2.76 and 1.13 respectively.

After 12 weeks, none of the participants from the control group attended the primary oral health clinic while 3 (6.4%) of those in the experimental group attended the clinic. There was no significant difference in the proportion of the civil servants in both control and experimental groups that attended the primary oral health clinic (Fisher's exact test = 0.08).

DISCUSSION

This study found that financial incentive had no impact on dental service utilization. The difference of 6.4% in the proportion of the civil servants who utilized dental service in both control and experimental groups was not significant ($p=0.077$). This finding is similar to that reported in a study in Korea after the Korean government reduced the cost of a dental procedure (scaling) for adults. They reported an increase of only 4% in the proportion of people who had the scaling procedure following the cost reduction.⁹

Most other studies have reported the impact of free health services or dental insurance not cost reduction. Matee and Simon found that the introduction of fees for dental services in Tanzania resulted in a 33.2% decrease in dental service utilization.¹¹ Similarly, the introduction of free dental services in South Africa resulted in a 50% increase in dental service utilization.¹² In addition, a study among employees in Hong Kong showed that those who had dental benefit schemes were significantly more likely to utilize dental service than those who did not.¹³ These studies demonstrate that even though finances are important barriers to dental service utilization; a combination of interventions would be required to increase dental service utilization by more than 50%.

Dental service utilization depends on the complex interplay of micro, meso and macro factors.¹⁴ These factors were not assessed in this study. It would be instructive to follow up on the civil servants in both groups to elicit their reasons for not utilizing dental service after referral. The findings from such a follow-up study would then direct future strategies to improve dental service utilization.

CONCLUSION

In this study, financial incentive by reducing the cost of treatment by a half did not result in increased utilization of dental care services among adults. Other ways of tackling barriers to utilization of dental services will have to be explored.

REFERENCES

1. Oral Health in America: A Report of the Surgeon General. 2000. (<https://profiles.nlm.nih.gov/ps/retrieve/ResourceMetadata/NNBJT/>) Accessed June 2018
2. **Osuh ME**, Oke GA, Asuzu MC. Dental services and attitudes towards its regular utilization among civil servants in Ibadan, Nigeria. *Ann Ib Postgrad Med.* 2014; 12(1):7-14.
3. **Varenne B**, Petersen PE, Fournet F, *et al.* Illness-related behaviour and utilization of oral health services among adult city-dwellers in Burkina Faso: evidence from a household survey. *BMC health services research.* 2006; 27;6:164.
4. **Andersen R**, Newman JF. Societal and individual determinants of medical care utilization in the United States. *The Milbank Memorial Fund Quarterly Health and Society.* 1973; 51:95-124.
5. **Alade O**, Arikawe O, Lawal F, Taiwo J. The cost minimization analysis of an outreach dental service: a pilot study at Akinyele local government area in Nigeria. *Ann Ib Postgrad Med.* 2016;14(1):35-40.
6. **Mumghamba E**, Joury E, Fatusi O, *et al.* Capacity building and financing oral health in the African and Middle East Region. *Advances in dental research.* 2015;27(1):32-42.
7. **Odeyemi IA**. Community-based health insurance programmes and the national health insurance scheme of Nigeria: challenges to uptake and integration. *International journal for equity in health.* 2014;13(1):20.
8. **Osazuwa-Peters N**. The Alma-Ata declaration: An Appraisal of Nigeria's Primary Oral Health Care Three Decades Later. *Health Policy.* 2011; 99 (3):255-260.
9. **Jang YE**, Kim CB, Kim NH. Utilization of Preventive Dental Services Before and After Health Insurance Covered Dental Scaling in Korea. *Asia-Pacific journal of public health.* 2017; 29(1):70-80.
10. **Petersen PE**, Baez RJ, editors. *Oral Health Surveys: Basic Methods.* 5th ed. Geneva, Switzerland: World Health Organization; 2013.
11. **Matee M**, Simon E. Utilisation of dental services in Tanzania before and after the introduction of cost-sharing. *Int Dent J.* 2000; 50(2):69-72.
12. **Bhayat A**, Cleaton-Jones P. Dental clinic attendance in Soweto, South Africa, before and after the introduction of free primary dental health services. *Community dentistry and oral epidemiology.* 2003; 31(2):105-110.
13. **So FHC**, Schwarz E. Demand for and utilization of dental services among Hong Kong employees with and without dental benefit coverage. *Community Dent Oral Epidemiol.* 1996; 24(3): 201-206.
14. **Harris R**, Raison H, Christian B, *et al.* Interventions for improving adults' use of primary oral health care services. *The Cochrane Library.* 2017.