Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Original Research

The relationship between access to and use of dental services following expansion of a primary care service to embrace dental team training

K.L. Wanyonyi [a,*], D.R. Radford [b,c], J.E. Gallagher [a]

[a] Department of Dental Public Health, King's College London, UK
[b] Department of Fixed and Removable Prosthodontics, King's College London, UK
[c] University of Portsmouth Dental Academy, UK

ARTICLE INFO

Article history:
Received 23 November 2012
Received in revised form
3 April 2013
Accepted 15 August 2013
Available online 24 October 2013

Keywords:
Dental service access
Patient populations
Health service delivery

ABSTRACT

Objectives: To investigate changes in the patient population and treatment case-mix within an expanded primary care dental training facility in Southern England.
Study design: Cross-sectional analysis of patient management system data.
Method: Electronic data for patients with a closed/completed treatment plan in the 12-month period prior to, and following, dental service expansion were extracted for analysis ($n = 4343$). Descriptive analysis involved age, sex, payment status, deprivation status and treatment activity. Logistic regression was used to model the likelihood of treatment involving laboratory constructed devices (crowns, bridges, dentures), in relation to demography and deprivation in each time period.
Results: The volume of patients using the service increased by 48.3% (1749 cf 2594). The average age increased from 31.97 (95%CI: 30.8, 32.5) to 36.4 years (95%CI: 35.6, 37.1); greatest increase was in the over 75 years age-group (96%). The patient base became less deprived: patients exempt from payment reduced from 43.2% ($n = 755$) to 28.6% ($n = 741$) ($P = 0.001$) and the mean population deprivation score (IMD) reduced from 24.5 (95%CI: 23.8, 25.2) to 22.3 (95%CI: 21.7, 22.8). The volume and proportion of care involving laboratory constructed devices increased from 8.3% ($n = 145$) to 15.8% ($n = 411$) whilst assessments without interventive care decreased (34.5%–26.3%). On a logistic regression, the odds of having treatment involving laboratory constructed devices, increased with increasing age in both time periods 7% (95% CI: 1.06–1.08) and 6% (95% CI: 1.05–1.07) respectively. Furthermore, the odds increased by 38% OR: 1.38 (95% CI: 1.01–1.89) in period 2, for white patients. After adjusting for these effects, the odds of having care that involved laboratory constructed devices were less in period 2 than period 1 (100% cf 43%) for those who were technically exempt from payment (OR = 2.0; 95% CI 1.34 to 2.90 cf, OR = 1.43; 95% CI 1.13–1.81).
Conclusion: The patient population altered in relation to age and socio-economic status. The expanded service had greater uptake by older people while users were less likely to be

* *Corresponding author*. Dental Public Health, Kings College London Dental Institute, Bessemer Road, SE5 9RS, UK. Tel.: +44 (0) 2032994756; fax: +44 (0) 203 299 3481.
E-mail address: kristina.wanyonyi@kcl.ac.uk (K.L. Wanyonyi).

http://dx.doi.org/10.1016/j.puhe.2013.08.010

deprived. The expanded service, free at the point of delivery, attracted a higher proportion of patients who would normally have to pay health service charges. The service also showed an increase in treatment case-mix that involved laboratory constructed dental devices.

Introduction

Ensuring equitable access to dental services is an important element of dental service planning.[1–3] In countries including the United States of America [US] and the United Kingdom [UK], dental access and utilization rates have been shown to indicate disparities.[4,5] These disparities in access rates could be attributed to multifaceted factors, which are social, financial, geographical and attitudinal.[6,7] Research has shown that psychosocial factors such as age, gender, socio-economic status, attitudes, location of services and anxiety play a role in utilization of dental services.[2,7–10] This evidence has led governments and stakeholders into considering the local needs of a population when planning service delivery; thus improving dental service uptake and oral health.[11,12]

Planning dental services that are geared to the local needs of the population, involves considering changing disease levels and demography. These factors have been shown to have an impact on the nature of dental treatment required by a population.[13,14] Research has supported these findings by indicating that the increasingly ageing population in developed countries requires more advanced treatment services.[13,15] These advanced treatments could include provision of laboratory constructed devices such as crowns and dentures.

Poor socio-economic status has been long associated with inequalities in oral health and poor access to dental services amongst deprived communities further exacerbates the problem.[16,17] It is suggested that to encourage potential users to take up new health services, planners need to involve users in the service development process.[18] Helplines have been used to improve health service utilization for users with poor dental access; however, these approaches have been recognized as having limitations and may contribute to widening inequalities.[19] It is recommended that when informing consumers about health services, providers should also take into account the literacy of consumers, accessibility and comprehensibility of the information.[18]

This study is focused on an expanded primary care dental training Academy in Portsmouth in the South of England. The Academy was expanded to integrate education and training for dental students in an outreach setting with dental care professional students (Dental Hygiene and Therapy and Dental Nursing students); this was in order to improve both service capacity for the surrounding community and teamwork in dentistry. For a period of five years before the facility was expanded into the integrated dental academy, only dental care professionals were trained; and they received patients by referral from salaried dentists. The area surrounding the facility required increased dental service capacity, due to poor dental access rates, oral health inequalities and pockets of great deprivation. Estimated dental access rates in the most deprived wards in the city are as low as 42% for children and 45% for adults; both are lower than the local averages (57%). Furthermore, the age groups 0–2 years, 18–24 years and over 75 years all show poor attendance rates.[20]

The expanded Dental Academy (one single site) holds a service contract with the local NHS (state funded dental care). The contract aim was to increase service availability for the local population and thus support access to dental care. The dental software in the outreach facility codes treatments according to the national NHS banding system; Table 1 provides an overview of the standard NHS Bands and treatments included. In the period after the facility was expanded there has been an increase in service capacity from three salaried dentists to 20 final year dental students every week during academic terms. The expanded facility hosts 72 Dental Hygiene and Therapy students and 20 Dental Nursing Students. Basic elements of the patient management system remained the same during the expansion; however, additional information was collected and this was more time consuming for practitioners. Clear changes were put in place to facilitate structural expansion and workforce increases; such as double the number of working units. Other changes included, a transformation from collecting patient contribution fees to providing free care to all regardless of their requirement to pay for NHS care, and an amended system to access care through the dental helpline. Finally students were combined into 'practice teams' for combined clinical training for dental and dental care professional students.

The aim of this study was to assess the changes in the demography, including deprivation status, of the patient

Table 1 – NHS treatment categories in England.

NHS treatment categories	Description
Band 1 course of treatment	This covers an examination, diagnosis (including X-rays), advice on how to prevent future problems, a scale and polish if needed, and application of fluoride varnish or fissure sealant.
Band 2 course of treatment	This covers everything listed in Band 1 above, plus any further treatment such as fillings, root canal work or removal of teeth.
Band 3 course of treatment	This covers everything listed in Bands 1 and 2 above, plus crowns, dentures and bridges.

Note: NHS payment system in England from April 2006.For further information see NHS Choices – http://www.nhs.uk/nhsengland/aboutnhsservices/dentists/pages/nhs-dental-charges.aspx.