



An intervention study to assess the effectiveness of a reminder telephone call in improving patient appointment attendance at a Community Dental Service clinic

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Abstract: This paper first describes the action taken to quantify the problem of high rates of failed appointments at a Community Dental Service clinic in Lanarkshire, Scotland. Then describes an intervention to implement and evaluate a potential solution of reminder telephone calls to patients. The paper illustrates the dental public health competencies of: evaluation of dental health services, and of managing resources and time.

Key words: dental attendance, intervention, telephone reminder, Scotland

Background

Attendance at dental appointments is essential to ensure continuing care, complete necessary dental treatment, diagnose oral disease early and prevent its development. Regular attendance is associated with better oral health (Richards and Ameen, 2002) and patients who fail to attend (FTA) dental appointments increase their risk of poor dental health (Skaret *et al.*, 1998). The problem of patients failing to attend scheduled appointments is argued to be one that has consequences for the cost of health care and results in poorer access to health care services for those in need, with subsequent poorer clinical outcomes (Bech, 2005). Failure to attend dental appointments is a significant and widespread problem which causes loss of valuable clinical time, wastes clinical and administrative resources, leads to increased waiting times, lengthens treatment times, reduces service efficiency and effectiveness, and is associated with patient failure to complete active treatment (Downer *et al.*, 2006). In a fee-per item service there is also obviously loss of income to the affected clinician.

The principal reasons reported for failed appointments are illness, forgotten appointments, resolution of symptoms and administrative error (Cosgrove, 1990; Gilhooly *et al.*, 1994). Other factors such as difficulty cancelling appointments, failure to consider dental treatment valuable, lack of trust in the dental service, health issues, difficulty leaving work or school, dental fear and dissatisfaction with previous dental treatment have been reported to be associated with an increased risk of failed appointments (Gustafsson *et al.*, 2010; Hallberg *et al.*, 2008; Skaret *et al.*, 1998; Wogelius and Poulsen, 2005). Other reasons behind FTAs include patient factors, such as higher dental anxiety rates in children and patients with special needs (Gordon *et al.*, 1998), and the difficulties attending appointments faced by patients with limiting medical conditions (Dougall and Fiske, 2008).

High FTA rates are not a problem limited to dentistry, with a variety of methods used in medical practice to understand and reduce this costly problem (George and Rubin, 2003; Sawyer *et al.*, 2002).

Initial impetus for action

Poor attendance is a problem throughout the Community Dental Service (CDS) in Lanarkshire, one of the most deprived regions in Scotland (Scottish Government, 2013). It is also well documented that deprivation is linked to lower dental attendance rates in Scotland (Newton *et al.*, 2007). The incentive to reduce FTA associated inefficiencies was inspired by the high dental need of the patients treated by this service.

Initial action

An audit of retrospective data from a computerised patient management system was undertaken to determine the FTA rate in a CDS clinic and compare it with other recorded FTA levels. All appointments with all three dentists working in the clinic over an eight-month period (August 2013 to March 2014) were examined. Data collection included periods of term time and school holidays to reduce bias and improve the validity of results. Similarly, short-notice emergency appointments (made less than 24 hours in advance) and appointments carried out as domiciliary visits were excluded from the study - both factors which could affect appointment attendance.

The sample included 1,150 patients of which 260 were FTAs, 23.4%. This figure lies within the 12% to 31% range of FTA rates found in the General Dental Service (GDS) and CDS before the introduction of corrective interventions (Perry, 2011; Patel *et al.*, 2000; Skaret *et al.*, 1998).

Allowing the rate to remain at this level was considered an inefficient way of managing a service which treats patients with high dental need. There is no gold standard in the literature regarding FTA rates for ideal or efficient services. However for the purpose of this study it was felt that an FTA level of 5% or less represented a realistic level for an efficient service.

Solutions suggested

Elsewhere, interventions to improve communication with patients have reduced FTA rates through reminder telephone calls, text messages or mailings (Almog *et al.*, 2003; ; Reekie *et al.*, 1997). There is some evidence that telephone voice reminders are more effective than SMS text messages (Nelson *et al.*, 2011), although a Cochrane review based on evidence of moderate quality found little difference in their effects on patient appointment attendance (Gurol-Urganci *et al.*, 2013).

An intervention to reduce failed appointments by means of a reminder telephone call to patients was introduced to the CDS clinic. These reminders were made by dental nurses to the patient's preferred contact telephone number the day before their appointment. There was the option for patients to choose not to disclose a contact telephone number at every examination appointment. The effectiveness of this intervention was assessed through re-auditing the FTA rate over a three-month period, May to July, 2014.

Actual outcome

The re-audit found the FTA rate of 498 appointments was 61 appointments, 12.2%. This represents an approximate halving (48%) of the earlier FTA rate of 23.4% ($p < 0.0001$, Table 1). A clear reduction.

Table 1. Contingency table showing number and percentage of attended and failed dental appointments in a Community Dental Service clinic pre- and post-initiation of a telephone appointment reminder system

Exposure	Outcome		n
	Non-attendance	Attendance	
Not reminded	269, 23.4%	881, 76.6%	1,150
Reminded	61, 12.2%	437, 87.8%	498
$p < 0.0001$; Odds ratio=0.46; 95%CI 0.34,0.62			

Challenges addressed

The reduction in FTAs was an improvement for patients and the service. However, the remaining 12.2% FTA rate falls well short of the target of 5% or less. Similar appointment reminder studies have found reductions in FTA rates from an initial 9.4% to a minimum of 3% in a small GDS practice while a hospital reduced medical FTAs to 8% compared to a comparator site level of 27% (Reekie and Devlin, 1998; Reti, 2003).

Future implications

The halving of the FTAs and the high cost of missed appointments suggest that extending a telephone appointment reminder system to other CDS clinics would be likely to result in clinical benefits to patients and improvements in service efficiency.

Despite the making of reminder telephone calls being time consuming they were practicable and halved the FTA rate. Limitations include consistent staff compliance to deliver this intervention and patients keeping contact information up to date and allowing contact. An automated messaging system would help with the first of those limitations though human reminder conversations may have advantages in rearranging appointments where patients no longer find an appointment practicable. Patients' preferred communication medium may well vary between clinical settings.

The multi-factorial nature of FTAs highlights the challenges in reducing this problem. While some factors are outside the control of a dental service - patient illness and difficulty leaving school or work - action to improve patient attitudes towards the value of dental treatment and trust in the dental service, as well as to reduce patient fear, anxiety and dissatisfaction may also result in a decrease in failed appointments.

It is possible that patients become dependent on appointment reminders over time and the risk arises that patients may fail to attend appointments in the absence of a reminder in future.

Learning points

Despite initiating this effective telephone appointment reminder system, too many failed appointments still occurred and a future study could determine the continued benefit to FTA rates of telephone reminders over a longer period of time and at a spread of clinics.

Lack of communication between healthcare provider and patient is only one factor associated with failed dental appointments. It is clear there is still much to learn about the other factors so that dental services can cooperate with patients, communities and other services to reduce barriers to accessing dental care.

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