Toward a better understanding of dental appointment-keeping behavior


Abstract – Objective: Broken appointments cause adverse outcomes in healthcare systems: They interrupt continuity of care, waste resources, affect workflow, and reduce population-wide access to care. A better understanding of dental appointment-keeping behavior would support efforts toward designing novel interventions aimed at reducing rates of broken appointments. Methods: The authors conducted a conceptual review of quantitative and qualitative research on dental appointment-keeping in the United States. Results: Research in this area is limited. Providers tend to use a blunt instrument to improve appointment-keeping: a system of reminder calls. There is evidence that patients with higher rates of broken dental appointments are the very ones who are most in need of care. Appointment-keeping barriers are multifactorial and related to social issues. They can be described as falling into three overlapping categories: psychological barriers, structural barriers, and health literacy barriers. Conclusions: Appointment-keeping interventions could simultaneously address social factors that exacerbate illness and improve workflow and finances. There arises an opportunity to design innovative patient-centered interventions tailored to particular barriers.

Broken appointments contribute to adverse oral healthcare outcomes. They interrupt continuity of care, waste resources, interrupt workflow, and reduce population-wide access to care by artificially reducing the number of available appointments. Moreover, they are a facet of dental care underutilization, which is of special concern within at-risk, medically underserved populations. There is little research on broken appointments in dental settings, and most dental appointment-keeping interventions that are reported in the literature use a blunt instrument to affect positive change: reminding patients of their appointments. Yet persistent failures to access scheduled, freely available dental care by at-risk populations have led some to conclude that the provision of free preventive care does not in itself remove utilization disparities (1), and suggests that the phenomenon of broken appointments is psychosocially complex, necessitating innovative interventions that go beyond what we have termed a ‘reminders paradigm’.

The purpose of this study was to review the evidence on broken appointments in American dental settings, and to propose a conceptual model of dental appointment-keeping behavior which will map known data in the service of presenting and clarifying opportunities for further research beyond the reminders paradigm. Understanding the major variables that drive dental appointment-keeping would lay a foundation for designing novel patient- and family-centered interventions, supporting efforts to redefine health care beyond ‘sick care’ to include addressing the social factors that exacerbate illness (2). While the findings described in this study are applicable to any practice setting, they may be of special interest to oral healthcare providers and managers in safety net clinics and health centers, as a central feature of...
their mission is to improve the health of the at-risk, medically underserved patients for whom broken appointments may be one symptom of healthcare underutilization.

Broken appointments are a concern across all healthcare services. Why, then, study dental appointment-keeping behavior in particular? Theoretical and empirical studies suggest that dental services have qualities distinct from medical services in all three principal domains governing service utilization: predisposition to use services; ability to secure services; and illness level (3). With respect to ‘predisposition’ and ‘illness level’, oral health deterioration often takes place gradually, with the detrimental effects of postponing care remaining unnoticed for long periods (4); this contrasts acute illnesses which place patients in contact with medical providers on a more routine basis. And with respect to ‘ability to secure services’, there is evidence that prospective dental patients may experience difficulties in accessing care due to location and cost barriers (5, 6). Research on dental appointment-keeping can therefore be informed by the existing literature in other healthcare services fields, but a full understanding will require consideration of factors unique to oral healthcare delivery.

Methods

Review of literature on factors influencing dental appointment-keeping

This review focused on studies conducted in the United States to reduce variability in contextual factors that affect appointment-keeping. To our knowledge, 11 studies in the United States have focused on systematically investigating demographic and clinical variables associated with dental appointment-keeping behavior. The demographic characteristics that have been associated with lower rates of appointment-keeping include self-pay for dental care, rural residence, adolescent age (7); use of public assistance, greater distance from home to clinic, lower educational attainment, and race, with non-Whites having higher broken appointment rates than Whites (1). Psychosocial characteristics associated with lower rates of appointment-keeping include significant debt (1); having a resident rather than a faculty member as the dental provider (7); lack of a working phone, previous history of broken appointments (8); lower health literacy scores (9); dental fear (10, 11); common fears (11); and self-reported depression, moodiness, and prior appointment avoidance due to dental fear (12). The practice of scheduling different members of the same family on the same day, or ‘batch appointments’, has been associated with higher clinicwide rates of broken appointments (13); however, clinics must weigh this risk against the finding that prior dental visits at the same clinic by children from the same household are associated with a delay in caries onset (14). While surveys suggest that many dentists believe that broken appointments are a problem among Medicaid-insured patients (15–18), the data are mixed, with some studies suggesting that Medicaid-insured patients do break appointments at a higher rate than others (19–22), and other studies finding no association (7, 9, 23, 24).

Research also suggests that the patients who are least likely to access dental care are the very ones who are most in need of that care. Greater number of decayed tooth surfaces at baseline has been associated with underutilization of free dental appointments in rural areas (1), and children with higher caries scores have shown a tendency toward missing more appointments (8). Among men who sought health information from one source or none, it was found that a greater proportion of participants with an urgent chief complaint broke appointments than those with a nonurgent chief complaint (9). In a school screening study, the guardians of children who failed to access their needed follow-up care possessed oral health risk factors themselves, such as a greater number of missed workdays due to tooth problems (25).

Few published studies have asked patients themselves to state why they did not show up for a dental appointment; this suggests a significant gap in knowledge and an opportunity for investigation. In the New England Children’s Amalgam Trial, primary reasons cited by patients for missed dental appointments included scheduling problems, weather, forgetting the appointment, conflict with another activity, illness, transportation problems, work conflict, family emergency, and travel (1). A qualitative focus-group study on barriers to dental care access suggests that ‘participants ... considered the demeaning and discriminatory attitude and behavior of front-office personnel as a major barrier. To avoid encountering such attitudes and behaviors, some participants often postponed or canceled dental visits’ (p. 57) (26). To our knowledge, no other studies conducted in the United
States within the past three decades have systematically investigated what patients have to say about why they break appointments in dental settings.

Review of literature on dental appointment-keeping interventions
Published research on dental appointment-keeping interventions mainly describes the use of automated or semi-automated reminders (27–30), sometimes in combination with a comprehensive policy which terminates patients from services after a certain number of broken appointments (31–34). Other interventions have included required educational sessions, some in the form of information about how broken appointments affect clinic operations, and some in combination with information about oral hygiene or access to other health services (32, 35). Case management has reduced rates of broken appointments in dental settings and may encourage follow-up care, albeit with modest gains (8, 36); the intervention employed by the case managers themselves is described as also consisting of reminders with the addition of support such as transportation. Oral healthcare providers also protect their yield by double- or triple-booking (33, 37), which across healthcare settings has been shown to reduce the adverse impact of broken appointments on both access and productivity (38, 39). The various reports described above show rates of broken appointments being reduced by between 10% and 40% after an intervention.

Fig. 1. Factors Influencing Appointment-Keeping Behavior.

Discussion
Conceptual model: factors influencing dental appointment-keeping
Taken as a whole, the current body of intervention research tends to describe dental appointment-keeping behavior with limited acknowledgment of its complexity and connection with equitable access, and with proposed solutions largely centering on what we have termed a ‘reminders paradigm’. Yet general research findings suggest that appointment-keeping barriers are multifactorial, related to social issues, and not reducible to problems with remembering. The proposed conceptual model classifies appointment-keeping problems into three overlapping categories: psychological barriers, structural barriers, and health literacy barriers. These factors are displayed schematically in Fig. 1 and are discussed in detail below. The figure provides a few concrete examples of each of the three categories (e.g., ‘cost’ is listed as a structural barrier), but the list of barriers is meant to be illustrative rather than exhaustive. Because some barriers fall within multiple categories (e.g., a ‘language barrier’ could relate to structural factors as well as health literacy), the figure displays certain factors as resting in between two or more categories. In Fig. 1, the extent to which oral healthcare providers can modify each barrier is represented schematically as well; this determination might play a significant role in deciding to target that barrier for a novel intervention. For example, while a
patient’s schedule is typically unmodifiable, oral healthcare providers might improve rates of broken appointments by addressing related issues—for example, by extending hours of operation or attempting use of advanced access scheduling (39, 40).

Proposed psychological barriers that bear a conceptual relationship to broken appointments include a range of experiences ranging from dental fear and avoidance, to symptoms of mental health diagnoses that impact self-care, to limitations in working memory or executive functioning that make organization and follow-through more difficult. One retrospective study was able to predict broken or canceled dental appointments using chart notations of self-reported moodiness, depression, and prior appointment avoidance due to dental fear (12), and survey research does suggest some connection between missed appointments and dental anxiety (10, 11). Some psychiatric symptoms have been found to impact self-care in general and oral self-management specifically (41, 42). Thus, psychological barriers may underlie some deceptively simple causes of broken appointments, such as forgetting. Figure 1 lists other psychological barriers that may impact appointment-keeping including dental fatalism (43); path dependency after a long history of inadequate dental care; and emotional exhaustion or ‘family burnout’, defined as a curtailed ability to problem-solve that results from the fatigue of managing complex and stressful family relationships (44).

Proposed structural barriers that bear a conceptual relationship to broken appointments include transportation and scheduling difficulties (1, 36) and difficulty taking time off work or school (36). This category also encompasses perceptions that front-office staff have behaved in a ‘demeaning and discriminatory’ manner (26), as well as qualitative evidence that certain types of patients enjoy special access to dental appointments due to the personal biases of front-office personnel (17). Financial limitations are also a potential structural barrier to appointment-keeping. In one 2014 survey, 40.2% of adults indicated that they would forgo dental care due to cost (5), and while forgoing care is different from failing to keep an appointment, separate findings do indicate that self-pay patients break appointments at a higher rate than insured patients (7). Yet dental intervention studies for people with oral health risk factors have noted severe rates of attrition, even when transportation and follow-up care were provided free of charge, and even when telephonic reminders were provided (1, 25, 35).

In the New England Children’s Amalgam Trial, reasons for missed appointments included structural barriers such as transportation and scheduling difficulties, but also the belief that dental care was a low priority (1). This could be understood as a health literacy barrier, where health literacy is defined as ‘the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions’ (45). Limited health literacy is thought to be a significant barrier to improved oral health, because engaging in effective oral self-management requires the ability to understand, interpret, and act upon health information (46); with respect to appointment-keeping, limited health literacy may undermine the ‘predisposing factors’ and ‘illness factors’ that are theorized (3) to impact service utilization. Select studies illustrate this phenomenon. One secondary data analysis examined the relationship between oral health literacy and broken appointments at a dental clinic (9). The authors found that using fewer sources to seek health information was the strongest predictor of breaking an appointment, followed by scores on an oral health literacy subscale. Another study (47) found that lower oral health literacy in the parents of pediatric dental patients was associated with higher emergency dental care spending, hinting at a connection between oral health literacy and preventive care. A health literacy environmental scan of community-based dental clinics (37) set out to identify institutional features ‘that enhance or inhibit access to oral health information and preventive and treatment services’ (p. e85) and uncovered several variables of interest to appointment-keeping research. Of 26 clinics surveyed, only 15 had established no-show policies, and documented strategies to improve appointment-keeping included staggering appointment times, overbooking, and reminder calls.

Next steps: the need for novel interventions and basic research
Most studies have attempted to improve appointment-keeping by reminding patients of their appointments, and have mitigated the impact of broken appointments on access and workflow through overbooking. While these strategies have been shown to reduce overall rates of broken appointments, they may not do so for a subset of the patient population, particularly those with
multiple risk factors. Consider, for example, a qualitative research study which showed that in medical settings, dissatisfaction with services and perceived disrespect can influence the extent to which patients feel obligated to keep appointments they have made (48). As overbooking is associated with longer wait times (38, 39), a no-show protocol that relies on overbooking may inadvertently compound the problem of broken appointments in a subset of the overall patient base (37, 39), particularly if they experience long waits as disrespectful of their time. Consider also a school-based screening and referral trial, which found that only 10 of 30 children who screened positive for an oral health emergency had accessed needed care nine months later (25). This was in spite of the fact that the children were eligible for free care; the children’s parents were told there was a dental emergency and given contact information for participating dentists; and staff members from the study and at the school delivered repeated reminders about the need for follow-up care. It seems that for some patients, reminders and even free care are not sufficient.

For each of the proposed factors influencing appointment-keeping behavior—psychological, structural, and health literacy—there can be a tailored intervention that targets any modifiable barrier. What follows is a brief sampling of proposed appointment-keeping intervention strategies that can be used by oral healthcare providers or tested in healthcare intervention research.

Remediating modifiable psychological barriers might include outreach to dentally anxious patients using behavioral health strategies that anticipate and address the desire to avoid appointments. Behavioral interventions, for example, have been shown to reduce dental anxiety (49). Clinical management of dental anxiety can take place within general practice using simple techniques such as providing ‘sensation information’ and suggesting coping skills, provided that the patient’s anxiety is not severe enough to warrant a referral to a mental health specialist (50). Providers can nonjudgmentally bring up the possibility of a broken appointment with a dentally anxious patient and suggest ways to cope with anxiety that would lessen the possibility of avoidance.

Remediating modifiable structural barriers might involve extending evening hours or attempting advanced access scheduling, which eliminates the practice of scheduling appointments many months in advance (39, 40). Case management has been used to reduce structural barriers to dental care (8, 36, 51), and while most oral healthcare settings would not have the resources to hire a dedicated case manager, there are promising primary care models that involve groups of providers sharing one case manager who provides phone-based disease management support to referred patients (52). Oral healthcare providers also can provide support and guidance to front-office personnel so as to reduce sources of bias in the scheduling process (17): For example, clinical and administrative teams as a group can discuss skills in reflective listening, problem-solving, and cultural humility (53) in an effort to reduce broken appointments resulting from perceived episodes of discrimination or disrespect (26, 48).

Remediating modifiable health literacy barriers might include improving the usability of health information, education, and forms; creating a user-friendly physical environment; assessing health literacy using standard forms; and using the ‘teach back’ method of communication, in which the patient is asked to demonstrate new knowledge that was just provided (54). Because oral health deterioration takes place gradually, and the detrimental effects of postponing care can remain unnoticed for long periods (4), the motivation to attend a routine appointment can be low, particularly if the value of preventive care is poorly understood. Providing patients with information that increases the importance, relevance, and salience of oral health can empower them to assign the appropriate level of priority to dental visits.

Additional basic research is also needed. Few studies in the past several decades have analyzed the demographic and clinical variables associated with broken appointments; even fewer have discussed attempts to reduce them. Studies do not always distinguish between late cancellations and no-shows, which may be a quite relevant distinction when attempting to design an outreach intervention for patients at risk of breaking appointments. Moreover, there is much that is still unknown about the relationship between appointment type and appointment-keeping behavior in dental settings. Are broken appointments more likely for an initial appointment or a follow-up appointment? A routine appointment or an emergency? Prophylaxis or a planned procedure? A longstanding patient, a recently acquired patient, or a new patient? A self-referred patient or a patient referred by a physician? Answers to these key questions would be of significant benefit to the
The current lack of innovation in the practice management of appointment-keeping behavior in dental settings may reflect a desire to apply simple, low-cost interventions that have shown some effectiveness. However, it may also reflect the paucity of basic science on the major variables driving appointment-keeping. When broken appointments are seen as resulting from a jumble of different problems such as forgetting, cost, or irresponsibility, the reminders paradigm is a logical solution to the problem. However, because any appointment-keeping intervention will have its limitations due to variability in factors influencing dental appointment-keeping behavior (9), a conceptual framework that illustrates key trends and barriers, which can be updated as new research emerges, can help drive novel solutions to an entrenched problem. Moreover, targeted interventions to improve appointment-keeping among people with significant psychosocial risk factors and high need for care is of particular importance, as they stand to lose the most if their oral diseases languish untreated. Because appointment-keeping is a facet of access to care, weaving appointment-keeping interventions into general practice management may yield multiple benefits, including improved health outcomes, improved workflow, and lower costs.

Acknowledgments

This project received grant support from the Kellogg Foundation and the Nokomis Foundation to the University of Michigan School of Social Work.

References

38. LaGanga LR, Lawrence SR. Clinic overbooking to improve patient access and increase provider productivity. Decis Sci 2007;38:251–76.