

The effect of confirmation calls on appointment-keeping behavior of patients in a children's hospital dental clinic

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Abstract

Purpose: The objective of this prospective, randomized, controlled study was to evaluate whether confirmation calls made one or two working days before scheduled appointments reduce the percentage of broken appointments in a children's hospital dental clinic.

Methods: Patients were randomly assigned to three groups: 1) confirmation call made one working day before appointment; 2) confirmation call made two working days before appointment; and 3) control group (no confirmation call). Clinic staff made confirmation calls during normal office hours. Patient arrival was classified as 1) ≤ 15 minutes late; 2) > 15 minutes late; or 3) broken appointment.

Results: Three hundred and thirteen subjects were enrolled in the study: 77 subjects in group 1; 71 subjects in group 2; and 84 subjects in the control group. Eighty-one subjects (26%) could not be contacted by telephone. Overall, there was a 62% reduction in broken appointments among patients who received a confirmation call as compared to the control group. There was no significant difference between confirmation calls placed one or two working days prior to the appointment ($P=0.51$). Confirmation calls had no effect on punctuality. In comparing indigent care and private insurance, there was no significant difference in broken appointments. However, within the private insurance group, a confirmation call resulted in 93% of patients keeping their appointment as compared to 63% in the control group ($P<0.001$). No significant difference was noted in the indigent care group, with 79% of patients in the confirmation call group keeping their appointments as compared to 66% in the control group ($P=.093$).

Conclusions: Confirmation calls reduced the percentage of broken appointments in a pediatric dental clinic. There was no difference between calls placed one or two working days prior to the appointment. The greatest reduction in broken appointments was shown in the private insurance group. (*Pediatr Dent* 23:495-498, 2001)

Most dentists agree that their business success depends largely upon their patients making and keeping appointments for treatment. In this light, broken appointments can have a tremendous negative effect upon a dental practice. Multiple studies have attempted to analyze contributing factors that may predispose patients to poor appointment compliance.¹⁻⁶ Other studies have attempted to document methods of improving patient appointment-keeping behavior.⁵⁻¹⁰

A 1980 study by Deyo and Inui found that patients forgetting their appointments can be a significant contributor to broken appointment rates, especially when the time between appointments is lengthy.¹ In an effort to help patients remember their appointments, many dental offices provide a confirmation telephone call. In a 1977 study, Levy and Claravall reported a "significant difference in appointment-keeping rates" between groups randomly receiving a reminder call or no reminder call, "but only for the 'long interval' patient"—a long interval was defined as a minimum of two weeks.⁷ One year earlier, a study by Shepard and Moseley looked at the effect that mailed and telephone reminders have on broken appointments. They found that both reminders significantly reduced broken appointment rates.⁸

A 2000 study by Iben et al reported a significantly higher rate of broken appointments with Medicaid populations than with non-Medicaid patients.² These findings were consistent with those of previous studies published by DiStasio (1969) and Fazio and Boffa (1977), which found Medicaid and third party payment patients to be at a significantly higher risk for broken appointments.³⁻⁴

High broken appointment rates are a consistent problem in the dental clinic at Primary Children's Medical Center in Salt Lake City, Utah. With a high indigent patient population, the number of appointments missed or canceled with less than 24 hours notice seems to validate the finding of previous studies. In an attempt to minimize missed appointments, a reminder or confirmation call is utilized; however, it is unknown whether the timing of a confirmation call is important in helping patients keep their appointments. The objectives of this study were: 1) to establish whether confirmation calls reduce broken appointments in a predominantly indigent population of pediatric dental patients; and 2) to determine whether there is a difference in broken appointments when a confirmation call is placed either one or two working days prior to the appointment.

Methods

This prospective study was conducted between January and April, 2001 in the pediatric dental clinic at Primary Children's Medical Center (PCMC), Salt Lake City, Utah. Approval for the study was obtained from the University of Utah Institutional Review Board and the requirement for consent was waived.

Table 1. Demographic Characteristics of Groups

	24-hour call n=77	48-hour call n=71	No call n=84	No contact n=81
Confirmation call contact				
Adult relative	69%	68%	—	—
Youth relative	4%	4%	—	—
Answering machine	27%	28%	—	—
Insurance type				
Medicaid	40%	31%	40%	42%
Primary services (indigent care)	12%	9%	11%	14%
Private insurance	31%	42%	30%	30%
Other (self-pay, CHIP, Headstart, Fact)	17%	16%	13%	12%
Unknown	0%	2%	6%	2%
Travel time				
<1-hour drive time	93%	85%	93%	90%
>1-hour drive time	7%	14%	7%	8%
Unknown	0%	1%	0%	2%

a patient who arrived too late for treatment, or a patient who canceled with less than 24 hours notice. Data collection included appointment date, confirmation attempt date, call result, translator utilization, insurance status, patient arrival time, and broken appointments. Telephone confirmation was reported in four categories: 1) adult relative contacted; 2) message left with youth relative; 3) message left with family friend; and 4) message left on answering machine. Insurance status was reported in three categories: 1) indigent care; 2) private insurance; and 3) other (e.g., Head Start, FACT, self-pay, CHIP, etc.). Indigent care was defined as Medicaid or Primary Services, which is an indigent assistance program provided through PCMC. Patients making

Table 2. The Effect of Confirmation Calls on Appointment-Keeping Behavior*

	Appointment kept	Broken appointment
Confirmation call (24-hour)	88%	12%
Confirmation call (48-hour)	83%	17%
Control group	62%	38%*

* P<0.001 Chi-square comparison between groups

Subjects were eligible for enrollment if they were scheduled at least two weeks prior to the recorded appointment. Hospital interpreters were utilized in confirmation calls whenever possible to eliminate language barriers; however, patients were excluded from the study if a language barrier precluded telephone confirmation or if the child was scheduled for an appointment on a Tuesday after a Monday holiday.

Study participants were randomly assigned by computer in blocks of 30 to one of three groups: Group 1) 24-hour confirmation call (placed one working day prior to the scheduled appointment); Group 2) 48-hour confirmation call (placed two working days prior to the scheduled appointment); and Group 3) control group (no confirmation call). Subjects that could not be contacted (eg, no answer, no answering machine, telephone disconnected, etc.) were assigned to a separate group (no contact) for further analysis. In families where multiple siblings were scheduled on the same day, only one child was randomized into the study. Clinic office staff placed confirmation calls during normal office hours (8:30 a.m. to 5 p.m.), with a minimum of one attempt made for each assigned patient.

The main outcome measure of the study was whether the patient kept the appointment. Patient arrival time was reported in three categories: 1) 0-15 minutes late; 2) >15 minutes late; and 3) broken appointment. A broken appointment was defined as a patient who did not show up for the appointment,

contact with the clinic any time during the two weeks prior to their appointment were excluded from the study.

Data are reported using descriptive statistics. Statistical analysis for proportions was determined using Chi-square test, with Yates correction for continuity. P values were adjusted (Bonferroni inequality) where necessary to account for multiple comparisons. Statistical significance was set *a priori* at P<0.05. A minimum of 67 patients in each group was necessary to detect a 20% difference in proportions between groups (24-hour confirmation call versus 48-hour confirmation call versus no confirmation call) with 80% power. Statistical analysis was performed using SigmaStat software version 2.03 (SPSS, Inc., Chicago, Illinois.)

Results

A total of 313 subjects were enrolled in the study: 77 subjects were assigned to the 24-hour group; 71 subjects were assigned to the 48-hour group; and 84 subjects were assigned to the control group. Telephone confirmation failed (no contact) in a total of 81 subjects (26%). The children scheduled for appointments ranged in age from 14 days to 15 years old and their health status ranged from well children to severely compromised children. The majority of subjects (91%) were from the local northern Utah community (<1 hour drive time), with the remaining patients from more distant areas of Utah and the surrounding states. Of the patients whose insurance status was known (n=306), 51% of subjects received indigent care, 34% were covered by private dental insurance, and 15% of subjects had another method of payment (e.g., Head Start, FACT, self-pay, CHIP, etc.). Table 1 provides additional demographic data for each of the groups. The groups were similar in distribution regarding the type of insurance and the length of commute to the clinic.

Table 2 indicates that a confirmation call resulted in a statistically significant improvement in broken appointments. The percentage of broken appointments was not statistically different between the 24- and 48-hour call groups (P=0.51); thus, these

Table 3. The Effect of Preappointment Confirmation Calls on Appointment Punctuality

Confirmation call	24-hour	48-hour	Control	No contact
Number of patients who kept appointment	n=68	n=59	n=52	n=81
On time or ≤ 15 minutes late	94%	95%	96%	98%
> 15 minutes late	6%	5%	4%	2%

groups were combined and the aggregate was compared to the control group. Accordingly, 148 patients received a confirmation call (either one or two working days prior to the scheduled appointment), of which 14% had broken appointments as compared to 38% in the control group ($P < 0.002$; Bonferroni adjustment for multiple tests). This translated into a 62% reduction in broken appointments among patients who received a confirmation call as compared to the control group. Broken appointments were not significantly different between the control group and the no contact group (38% vs. 37%, respectively; $P = 0.98$).

Confirmation calls had no effect on the punctuality of the subjects who kept their appointments (Table 3). Subjects for whom insurance information was known ($n = 259$, including no contact group) were stratified into two categories by the type of insurance—indigent care and private insurance (Table 4). There was no significant difference between broken appointments when subjects receiving indigent care were compared with subjects with private insurance. Within the private insurance group, a confirmation call (either 24-hour or 48-hour) did result in a significantly greater percentage of patients who kept their appointment (93%) as compared to those that did not receive a confirmation call (63%) ($P < 0.001$). However, a significant difference was not noted in the indigent care group between those who did and did not receive confirmation calls, with 79% of patients in the confirmation call group keeping their appointments as compared to 66% in the control group ($P = .093$).

Commute time to the appointment was not a confounding variable in the study as $\geq 85\%$ of patients from all three groups traveled less than one hour to the appointment. Furthermore, the number of long-distance patients (> 1 hour, $n = 28$) was evenly distributed between groups and only three of these long-distance patients failed to show up for their scheduled appointment.

Discussion

The results of this study support the premise that a reminder call improves patient appointment-keeping behavior. A confirmation call placed either one or two working days prior to the scheduled appointment resulted in a 62% reduction in broken appointments as compared to the control group. These findings are comparable to reductions previously reported. In 1977, Levy and Claravall reported a 65% reduction in broken appointments after issuing a confirmation call. They included pediatric patients scheduled three to 264 days in advance of hospital appointment and the investigators found that confirmation calls reduced broken appointments only for patients scheduled more than two weeks in advance.⁷ In this study, only

Table 4. The Effect of a Confirmation Call on Appointment-Keeping Behavior with Results Stratified by the Type of Insurance*

	Appointment kept n (%)	Broken appointment n (%)
Indigent care		
Confirmation call	54 (79%)	14 (21%)
No confirmation call	58 (66%)	30 (34%)
Private insurance		
Confirmation call	50 (93%)*	4 (7%)
No confirmation call	31 (63%)	18 (37%)

* $P < 0.05$ for comparison of confirmation call vs. no confirmation call

patients who were scheduled at least 14 days in advance were included. While this study did not specifically examine the interval between scheduling date and appointment, the clinic does not routinely schedule appointments more than six months in advance, with the average elapsed time being approximately two months.

Schroeder (1973) reported a much lower overall rate of improvement (21-28%) associated with reminder calls to adult medical patients and concluded that mailed reminders were more effective in improving appointment compliance.⁹ However, it is noteworthy that a large percentage (42%) of patients in that study were not successfully contacted by telephone. In analyzing only patients who were successfully contacted, the average improvement in broken appointment rates for patients receiving reminder calls was 51%. Patients who were not contacted had approximately the same broken appointment rate as patients in the control group. These results are more consistent with those reported in this study.

Other investigators have cited failed telephone contacts as a considerable drawback to telephone confirmation calls^{6,9} and have suggested ways of improving contact success.^{6,8} In 1976, Shepard and Moseley reported that confirmation calls reduced broken appointments by 43%. Their use of evening calls resulted in fewer failed contacts (25%) as compared with Schroeder's study⁹ (42%) and thus the investigators suggested that calls made in the evening allow for better contact of patients.⁸ The present study challenges this contention as confirmation calls were made during normal office hours (8:30 a.m. to 5 p.m.) and the no contact rate was kept to just 26% of patients enrolled.

This study failed to find a relationship between confirmation calls and punctuality of the patient. Although confirmation calls improved patient attendance, there was no improvement in punctuality in any of the groups. Roughly 96% of all enrolled patients who kept their appointments were on time or less than 15 minutes late, regardless of whether or not they received a confirmation call. Distance traveled to the appointment may influence broken appointments and punctuality, however, none of the long-distance patients arrived more than 15 minutes late and many were actually early. The number of long-distance patients ($n = 28$) was evenly distributed between groups and only three patients failed to show up for their scheduled appointment. Furthermore, the long-distance patient group had better punctuality than the study group as a

whole. This may be due to a greater degree of planning required for the long-distance drive or the practice of coordinating multiple health care appointments into one trip to avoid unnecessary travel.

Overall appointment-keeping behavior did not vary between the indigent and private insurance groups, but the greatest decrease (81%) in broken appointments was noted in the private insurance group that received a confirmation call ($P < 0.001$). The 1998 study by O'Brien and Lazebnik noted a similar finding when they found telephone confirmation calls to be most effective with their private insurance patients. They observed a 63% decrease in broken appointments by patients with private insurance.⁵

Their study also found that confirmation calls had a significant effect on attendance in their indigent care group. While our data suggest that there was no significant effect of confirmation calls in the indigent care group ($P = 0.093$), these findings must be interpreted cautiously since the study was not powered to detect a difference within each insurance group. The difference in findings may be due to the fact that, in the current study, self-pay patients were included in the indigent care group while O'Brien and Lazebnik evaluated Medicaid patients separate from self-pay patients—they found confirmation calls did not have a significant effect on self-paying patients.⁵ Additional study is warranted to determine whether confirmation calls truly do reduce broken appointments in our indigent population.

While small differences may exist between studies, a general consensus exists between the present study and previous studies regarding the effect of confirmation calls on appointment-keeping behavior—reminder calls significantly improve patient attendance. The main objective of this study required elimination of failed contact (no contact) patients from the attendance portion of the study. This permitted a clear demonstration that successful confirmation contacts do indeed make a difference in patient appointment-keeping behavior. However, the fact remains that not all confirmation call attempts will result in a successful contact and this should not be overlooked in practical application. Previous studies have cited a high percentage of failed contacts and have questioned the cost-effectiveness of providing telephone confirmation calls. This study did little to address those concerns, but until new ways of improving contact success can be validated, the authors find telephone confirmation calls to be an effective and useful approach to improving broken appointment rates.

Conclusions

1. Confirmation calls result in a decreased incidence of broken appointments.
2. There is no difference between the effects of confirmation calls placed one or two working days prior to a dental appointment.
3. Confirmation calls may have a higher success rate in reducing broken appointments among patients with private insurance as compared to patients receiving indigent care. However, additional studies are needed to fully evaluate these findings.
4. The vast majority of patients who keep their appointment arrive on time or within 15 minutes of their scheduled appointment.

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