TITLE

Impact of demographics and appointment characteristics on patient attendance in a university dental clinic

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ABSTRACT

Introduction: Failed patient attendance in a university dental clinic is detrimental to the student learning experience, the university as a business, and to members of the public awaiting urgent dental treatment.

Purpose: This study aimed to identify the demographic, appointment characteristics, and time-related factors associated with patient attendance in a university dental clinic from 2015 to 2019.

Methods: A 5-year retrospective analysis was conducted in 2020 on data extracted from the Griffith University Dental Clinic patient management system. Following data cleaning and categorization, the dataset was downloaded into SPSS for statistical analysis. Frequencies,

odds ratio, and chi squared were used to determine the demographic and time-related factors of patients who had completed, cancelled, and failed to attend (FTA) appointments.

Results: A total of 23.4% of appointments were cancelled, and 6.6% were FTA.

Demographics associated with cancellations include females, adults aged 25 to 44, and private paying patients. FTA were higher in young adults aged 19 to 24, low to mid-range socioeconomic status (SES) and those eligible for publicly funded dental treatment.

Mondays and Fridays experienced the greatest number of FTA and cancellations, respectively. Emergency appointments had the greatest attendance rates and endodontic procedures the lowest.

Conclusion: The loss of clinical teaching hours, resources, and revenue necessitates the implementation of targeted strategies to minimize cancellations and FTA based on demographic and appointment characteristics that may render individual as high risk for failed attendance.

KEYWORDS

appointments; demographics; patient non-attendance; university health services

INTRODUCTION

Failed attendance is classified as either cancelled (the patient calls to inform of their absence) or failed to attend (FTA; the patient gives no notice of their absence).¹ Both will result in loss of revenue, wasted resources, increased waiting lists, and poorer health outcomes and will eventually impact on the entire health-care system.^{2, 3} Failed attendance in a university dental clinic may result in reduced clinical teaching hours affecting student competency required for professional registration.^{1, 4}

Patient demographics including age, gender, and socioeconomic status (SES) have been identified as significant factors associated with failed attendance.^{1, 5, 6} Patient attendance at a university dental clinic over 2 years (2011-2012), and following the introduction of a Short Message Service (SMS) reminder system, found 23% of appointments were cancelled and 9% FTA.¹ Patient attendance in a rural dental training facility over a 2-year period (2011-2012) reported 13.7% of appointments were cancelled and 21.2% FTA.⁵ Both studies found that patients aged 16 to 24 years were the least likely to attend dental appointments and females were more likely to cancel their appointment.^{1, 5} An important observation was that 71.3% of cancellations were conducted on the day of the appointment, thus limiting opportunities to fill the appointment slot.⁵

Significant demographic and patient-related factors associated with failed attendance include SES, gender, age, access to transportation systems,^{1, 5-7} forgetfulness, and inability to take time off work.² A significant association has also been reported between SES and dental attendance patterns with patients living in higher socioeconomic postcodes demonstrating greater dental attendance rates.⁸ A study of the association between SES

and oral health behaviors supports these findings with income and education identified as the greatest risk indicators for oral health behaviors.⁹

Time-related factors and appointment types also contribute to failed attendance.^{1, 6} In a university dental clinic appointments scheduled on Mondays and afternoon appointments between 12 and 3pm experienced the highest rate of failed attendance. Emergency appointments had the highest attendance rates (77.5%) and endodontic appointments had the lowest (61%).¹ Two studies found that lower attendance rates were observed in populations with greater dental anxiety, which may be worsened by the type of procedure booked.^{2, 10}

The impact of frequent patient reminders on patient attendance has been well documented. Some studies suggest that reminders increase patient cancellations, but decrease FTA.¹ A qualitative analysis of the reasons for failed attendance found that only 23.8% of patients stated they would benefit from an SMS reminder the day before the appointment, 48.3% would prefer a phone call, 25.9% an appointment card, and only 2% would prefer email reminders.¹¹ Another study of the efficacy of SMS reminder systems found that failed attendance rates decreased from 22.2% to 13.9% in the first 6 months after implementation; however, after 2 and a half years since its introduction, failed attendance rates increased again to 19.3%, and no significant difference in attendance rates were found between patients who did and those who did not receive the SMS.¹²

Strategies to overcome patient failed attendance have been widely evaluated.

Implementing a failed attendance fee did not significantly reduce failed attendance rates

and is ethically questionable in public health care.¹³ A study into the effectiveness of a dynamic appointment scheduling procedure to reduce patient-failed attendance utilized several overbooking strategies.¹⁴ A significant increase in clinic productivity and scheduling efficiency was found with < a 5% risk of appointment conflict (i.e., 2 patients arriving at the same time). Another study implemented a similar overbooking system targeting patients identified as “high risk” for failed attendance.¹⁵ Significant improvements in clinic productivity and a reduction in wasted resources were reported; however, this led to a slight increase in patient waiting times.

Failed attendance of health-related appointments does not only include poorer health outcomes for the individual, but significant financial losses to businesses and prolonged waiting lists in public health departments as well.^{2, 3, 11} Adults with unfavorable attendance presented on average with > 3 times the level of untreated decay than those with favorable attendance.⁸ A study of pediatric appointment trends concluded that missing appointments may result in an increase of emergencies and subsequent behavioral management issues.¹¹ Most emergency department (ED) admissions due to dental conditions may cause a significant burden on the healthcare system and could have been managed in a primary healthcare setting.¹⁶ The cost of an average acute ED admission in a public hospital in Australia ranges between AUD 3300 and AUD 6400. The number of potentially preventable hospitalizations due to dental conditions in Queensland between 2016 and 2017 was 13,708.⁸

There is minimal evidence in the literature addressing social demographics and appointment characteristics associated with failed attendance in Australian university dental clinics.

Results may provide valuable information for the development of effective interventions to tackle the issue of patient failed attendance, such as implementing overbooking systems on patients identified as high risk of cancelling or FTA. A previous study yielded relevant information that will be used to direct a sequential study into patient demographics and appointment characteristics associated with failed attendance.¹

Failed attendance in university dental clinics potentially impacts negatively on the student learning experience, which is fundamental in developing the skills required to become a competent and safe dental practitioner. Identifying significant factors associated with failed attendance will facilitate future endeavors to improve clinical teaching, productivity, and minimize public waiting lists and wasted resources. This study aimed to identify the demographic characteristics of patients that complete, cancel, or FTA appointments, differences in attendance patterns between specific patient demographics, the relationships between appointment characteristics and attendance patterns, and the relationships between time-related factors and attendance patterns.

METHODS

Approval was granted by the Griffith University Human Research Ethics Committee (GU HREC 2019/119) as part of a general protocol to audit clinical records for research purposes.

De-identified retrospective demographic and appointment data were extracted from the Griffith University Dental Clinic patient management system (Titanium by Spark Dental Technology) in January 2020 for all appointments booked between January 2015 and December 2019 and imported into SPSS version 26 (IBM Corp., Armonk, New York, USA) for

statistical analysis. The clinic's patient management system does consider any time cutoff (e.g., 24 hours) to record an appointment as cancelled by either the patient, student, or clinic. The system records a FTA when the patient gives no notice of their absence.

Demographic information obtained from the appointment record included the patient's age, gender, zip code, patient type (public or private) and provider type (year 3, 4 or 5 dentistry or final year dental prosthetics student). Dental prosthetics students are trained to work as independent clinicians to diagnose, design, manufacture, and fit removable dentures. A qualification in dental technology is a prerequisite for admission. These students have no prior experience in working with patients from their dental technology qualification.

Appointment information included status (completed, cancelled, or FTA), type (e.g., preventive, endodontics, operative, etc.), and day/date/time. Appointments with missing data for age, zip code, gender, and provider type were excluded. The patient age range was set from 2 to 100 to eliminate outliers and possible discrepancies.

Variables were categorized for the purpose of analysis. Patient age was categorized using the international classification Medical Subject Headings (MeSH) Age Groups¹⁷ as either preschool (2 to 5), child (6 to 12), adolescent (13 to 18), young adult (19 to 24), adult (25 to 44), mid-aged adult (45 to 66), aged (67 to 79), and old-aged (80 and over).

Appointment time was categorized into the 3 scheduled student clinic sessions (8 to 11 am, 12 to 3 pm, or 4 to 7 pm). SES was determined using patient zip codes and Socio-Economic Indexes for Areas (SEIFA) derived from the 2016 Australian Census data.¹⁸ A mean value was calculated from the Index of Relative Socio-Economic Advantage and Disadvantage, the

Index of Education and Occupation and the Index of Economic Resources deciles for each given zip code. Based on this, SES was classified as either low (mean 1 to 5.7), mid-range (mean 5.8 to 6.6), or high (mean 6.7 to 10). Driving distance between the patient's zip code and the clinic was calculated using the Google Maps Distance Matrix API and categorized as 0-9 km, 10-24 km, 25-49 km, 50-74 km, 75-99 km, or exceeding 100 km.

Following data cleaning and categorization, frequencies, odds ratio, and chi squared were used to determine the demographic and time-related factors of patients that had completed, cancelled, and FTA appointments. It is important to keep in mind that data were analyzed on an appointment and not an individual level. Results should, therefore, be interpreted within this context..

RESULTS

Detailed results are presented in Table 1. Following data cleaning, over the 5-year period of this study, 251,776 appointments remained to be analyzed for 31,304 patients. Of these, 70% (n = 176,166) were completed, 23.4% (n = 58,911) were cancelled, and 6.6% (n = 16,699) were FTA.

When analyzing patient demographics it was found that gender, age, SES, provider type, and distance from the clinic differed significantly between completed, cancelled, and FTA.

Females, irrespective of their age group, were more likely to cancel their appointment (odds ratio [OR], 1.15; 95% confidence interval [CI], 1.13–1.18) than males, but showed no significant difference in FTA. Patients with unstated gender were significantly more likely to cancel (OR, 1.37; 95% CI, 1.24–1.52) or FTA (OR, 1.75; 95% CI, 1.53–1.99) than males. Young

adults (19 to 24) had the lowest appointment completions (62.2%), while aged patients (66 to 79) had the highest (77.4%). Adults (25 to 44) were the most likely to cancel their appointments, while young adults were the most likely to FTA their appointment. Young adults were 5.8 times more likely to FTA than old-aged patients (80 and over). No significant difference was found in cancellation between patients with low, mid-range, and high SES. However, patients with low and mid-range SES were significantly more likely to FTA than patients with high SES. A large proportion of patients (42%) reside < 10 km from the clinic. Only 7.3% live > 50 km from the clinic. Patients who reside within 10 km of the clinic were the least likely to cancel (OR, 0.81; 95% CI, 0.75–0.87) but were the most likely to FTA (OR, 1.32; 95% CI, 1.14–1.53). Private patients were more likely to cancel their appointment (OR, 1.17; 95% CI, 1.15–1.2) but less likely to FTA (OR, 0.94; CI, 0.91–0.98) than public patients.

Appointment day and time were significant factors in determining appointment status. Mondays had the second highest rate of attendance (70.4%), but also had the highest chance of FTA. Fridays had the lowest attendance (68.9%) and the highest chance of cancellation. Appointments scheduled between 8 and 11am had the highest attendance (70.7%), but also the highest rate of FTA (7.2%). The lowest attendance (68.9%) and rate of FTA (6%) were found for appointments between 12 and 3pm, but the highest rate of cancellation (25.1%) were also found for this time. Patients were more likely to FTA an 8 to 11 am (OR, 1.27; 95% CI, 1.21–1.33) appointment than a 4 to 7 pm appointment.

Admissions and endodontics had the lowest attendance rate (65.7% and 67.4% respectively), while emergency appointments had the highest attendance (75.8%). Patients were significantly less likely to cancel admissions appointments than prosthodontic

appointments, but 2.17 times more likely to FTA. Dental prosthetics students experienced the highest attendance rate (71.3%) and had the lowest chance of FTA (OR, 0.74; 95% CI, 0.63–0.86) but the highest chance of cancellation (OR, 1.11; 95% CI, 1.04–1.18).

“Patient cancelled” was recorded in 43.3% of cancelled appointments, followed by “student cancelled” (34.4%), “rescheduled” (14.3%), and “clinic cancelled” (7.4%).

DISCUSSION

In our study, demographics factors (gender, age, SES, provider type, and distance from the clinic) and appointment characteristics (day, date, provider, and appointment type) both showed significant associations with patient attendance patterns.

Gender yields inconsistent results in the literature with both males and females demonstrating poor attendance patterns. In our study, females were more likely to cancel appointments than males. This should be explored further to reduce cancellation rates among females. No significant difference in FTA was found between males and females. This finding was consistent with previous studies^{1, 5}; however, in some studies, FTA was higher in males due to prioritizing work commitments over health-related appointments.^{19, 20} Those with gender listed as “unstated” had significantly higher FTA rates (13.8%) compared to males and females (6.4% and 6.7%, respectively). This difference may be a result of sample size since only 1284 patients identified gender as such compared to 93,361 females and 81,521 males included in the data. Previous studies have only considered “gender” as a dichotomous variable comparing females versus males only.^{1, 5, 19, 20}

For age, our study found that young adult patients (19 to 24) were almost 6 times more likely to FTA compared to old aged (80 and over) participants. Young adults also had the lowest number of completed appointments. Similar findings were reported in other studies.^{1,}

¹⁹ Adults (25 to 44) were the next age groups most likely to FTA, followed by preschoolers (2 to 5), although the latter had a substantially smaller sample size (n = 1324) compared to adults (n = 63,316). Aged patients had the highest attendance rates and were also the least likely to cancel or FTA. This is consistent with the literature.^{1, 19, 21} Other studies also confirmed our finding that adults are most likely to cancel their appointments, possibly due to prioritizing work and family commitments over their own health concerns.^{1, 19}

No significant difference was found in our study in cancellations between patients from low, mid-range, or high SES categories. Low (OR, 1.1) and mid-range (OR, 1.07) SES patients were only marginally more likely to FTA than patients in the high SES category. In a previous study, a greater association was found between people living in low SES regions and failed attendance of dental appointments.¹⁹ Reasons for this include financial concerns, affordability, and/or accessibility to transportation and potentially lower education levels of those living in low SES areas. Low SES is also associated with greater tooth loss, poorer understanding of oral health, and lower Oral Health Related Quality of Life (OHRQOL)²²⁻²⁴; thus, the value of attending dental appointments in this group may also be lower.

The distance a patient lives from the clinic was an important factor associated with both cancellations and FTA. Those living in the closest proximity (<10 km) were the least likely to cancel, but the most likely to FTA. The inverse was true for patients who lived > 100 km from the clinic who displayed the highest percentage of cancellations and the lowest rates

of FTA. These results were confirmed in a previous study.⁵ Patients who live close to the clinic may view easy accessibility and being able to attend on another date as a reason to FTA. In contrast, patients who must travel long distances to the clinic, would require more thoughtful planning in regard to mode of transportation, time off work, and child-care for parents with young children, which explains lower FTA in this group.

The Griffith University Dental Clinic offers dental treatment to both public and private paying patients. Public patients (e.g., concession card holders) are eligible for publicly funded or subsidized dental treatment. Treatment fees for private paying patients is around 30% less than in a private practice. In our study, private paying patients were more likely to cancel their appointment, but less likely to FTA. Reasons may be unexpected costs of the proposed dental treatment or requiring more time to save to be able to afford treatment. Private paying patients may also choose to complete their treatment at a private dentist rather than continue to attend a university dental clinic as it might take longer, and with more appointments, than with a private practitioner.^{1, 19}

In our study, the category of appointment (e.g., emergency, preventive, restorative, endodontics, periodontics, oral surgery) showed significant associations with FTA. The lowest attendance was found for admissions and endodontics. Lower attendance for admissions may be due to the waiting lists, as patients may decide to seek treatment elsewhere. Additionally, patients who are booked in for endodontics would most likely have previously presented to the clinic for an emergency appointment where the source of pain may have been addressed, and if symptoms have been resolved they may not understand the need to complete the endodontic treatment plan.¹ Literature confirms that patients are

less likely to attend for follow-up treatment if they are asymptomatic.^{25, 26} This study also showed that the highest number of completed appointments was observed for emergency appointments. This confirms findings in other studies.¹ Availability of emergency appointments are limited and can only be booked close to the appointment time or on referral from the Gold Coast University Hospital, adjacent to the Griffith University Dental Clinic. Patients, therefore, are less likely to forget about the appointment and being more motivated to attend to address any discomfort.

Significant relationships were found between different days where Monday appointments were the least likely to be cancelled, but the most likely to be FTA. Fridays had the lowest percentage of completed appointments, but were the most likely to be cancelled. These results are consistent with those found in similar studies.^{1, 5} With patients not being able to contact the clinic over a weekend to reschedule their morning appointment may explain the higher FTA for Mondays. Fridays may be more likely to be cancelled due to events and long weekends associated with this day. A more targeted approach to bookings and confirmation of appointments on these days may be required. It may also be beneficial to book treatments with higher attendance rates on Mondays and Fridays to counteract the lower attendance on these days.

Significant differences were also found between appointment times where earlier appointments (8 to 11am) showed the highest attendance rate (70.7%) and lowest risk of cancellation (22.1%), which is consistent with other studies.^{1, 5} However, this appointment time also had the highest number of FTA (7.2%). This is in contrast to other studies who reported that the last appointment of the day had the highest chance of FTA.^{8, 15}

Appointments from 12 to 3 pm showed the highest percentage of cancellations. This may be due to patients being unable to leave work during this time and school pick-up times overlapping with this appointment slot.

In our study, dental prosthetics students had the highest attendance and the lowest chance of FTA. This may be due to multiple appointments over several weeks being required to complete a full or partial denture. As a result, patients would be more likely to reschedule as opposed to FTA, possibly due to conflicting or unexpected commitments (e.g., work, sickness, other healthcare appointments) that arise during the many weeks of treatment. Additionally, many of these patients have been on lengthy waiting lists, thus are more likely to attend when given the opportunity. Dental prosthetics students also had the highest chance of cancellations, possibly influenced by treatment completed in less appointments than originally planned.

Since multiple appointments for an individual might result in clusters of similar attendance patterns, analysis of the data on an appointment instead of an individual level was a limitation of this study. Another limitation of this study was missing information for “appointment category” in 21.5% of appointments. This information is usually entered into the patient management system after a treatment plan has been generated to categorize future appointments. As such, if the appointment category was not recorded prior to a patient cancelling or FTA, there would be no data available for the type of appointment that was missed. However, we still considered the results of this variable as being significant due to the size of our data set. The method used to predict SES status was another potential limitation of the study. In our dataset, only the patient's current zip code is available, so this

might have changed during the study period. The last known zip code was then applied to all appointments for that patient. Our results can, however, still be considered to be significant as they were found to be consistent with other studies.^{19, 22-24} The patient management system does not record the time of the cancellation in relation to the time of the appointment. It, therefore, was not possible to report on the number of cancelled appointments that were filled by another patient if the cancellation occurred early.

Patient demographics and appointment characteristics are strongly associated with failed attendance and demand more attention in patient bookings. The implementation of an overbooking system applied to patients and/or appointment categories that are most at risk of cancellations and FTA should be considered to maximize clinic productivity and enhance the student learning experience. Although a telephone call the day before the appointment may increase the number of cancellations, at least this would allow for the appointment slot to be filled by another patient.¹¹

The Griffith University dental clinic has an automated reminder system where patients will receive a once-off SMS 24 hours prior to their appointment. Patients with a Monday appointment will receive their reminder on the Friday prior to their appointment.

Conclusions could not be drawn on the impact of this on patient attendance in our clinic over the study period; however, previous studies have reported on the introduction of such a system.^{1, 11, 12}

Since the demographics of patients attending a single university dental clinic may not reflect those of patients who attend other public and private dental clinics, results from this study

may not be generalized. It should also be noted that patients treated by dental students may have different perceptions and attitudes compared to patients attending a private dental clinic.^{1, 20, 27}

CONCLUSION

The purpose of this study was to determine how demographics, appointment characteristics, and time-related factors were associated with or predicated the various categories of attendance behavior in a university dental clinic. Results from this study identified the need to make changes to, or improve, the current reminder systems in place and investigate developing an overbooking system to increase productivity and clinical teaching hours and reduce wasted resources. Future studies evaluating reasons for failed attendance should be conducted to describe reasons behind failed attendance.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

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LIST OF TABLES

TABLE 1. Attendance patterns by gender, age group, distance from clinic, and socioeconomic status

TABLE 2. Attendance patterns by appointment time and day, patient, provider, appointment and cancellation type

TABLE 1. Attendance patterns by gender, age group, distance from clinic, and socioeconomic status

	Total	Completed	Cancelled	Cancelled	FTA	FTA	χ^2
	N (%)	N (%)	N (%)	OR (95% CI)	N (%)	OR (95% CI)	
Total appointments	251,776 (100%)	176,166 (70%)	58,911 (23.4%)		16,699 (6.6%)		
Gender							519.64*
Female	136,077 (54%)	93,361 (68.6%)	33,631 (24.7%)	1.15 (1.13-1.18)*	9,085 (6.7%)	0.97 (0.94-1)	
Unstated	2,120 (0.8%)	1,284 (60.6%)	543 (25.6%)	1.37 (1.24-1.52)*	293 (13.8%)	1.75 (1.53-1.99)*	
Male	113,579 (45.1%)	81,521 (71.8%)	24,737 (21.8%)	1	7,321 (6.4%)	1	
Age group (age)							7,363.31*
Preschool (2-5)	1,324 (0.5%)	894 (67.5%)	285 (21.5%)	1.37 (1.18-1.61)*	145 (11%)	4.99 (3.97-6.29)*	
Child (6-12)	7,639 (3%)	5,353 (70.1%)	1,572 (20.6%)	1.28 (1.16-1.41)*	714 (9.3%)	4.22 (3.58-4.97)*	
Adolescent (13-18)	5,026 (2%)	3,374 (67.1%)	1,149 (22.9%)	1.39 (1.28-1.52)*	503 (10%)	4.4 (3.77-5.15)*	
Young Adult (19-24)	14,833 (5.9%)	9,230 (62.2%)	3,663 (24.7%)	1.5 (1.41-1.6)*	1,940 (13.1%)	5.77 (5.08-6.56)*	
Adult (25-44)	63,316 (25.1%)	39,488 (62.4%)	16,733 (26.4%)	1.57 (1.49-1.65)*	7,095 (11.2%)	4.95 (4.39-5.58)*	
Mid-Aged (45-64)	77,831 (30.9%)	54,573 (70.1%)	19,028 (24.4%)	1.24 (1.18-1.31)*	4,230 (5.5%)	2.13 (1.89-2.41)*	

Aged (66-79)	71,367 (28.3%)	55,269 (77.4%)	14,322 (20.1%)	0.96 (0.91-1.01)	1,776 (2.5%)	0.86 (0.76-0.98)*
Old Age (80+)	10,440 (4.1%)	7,985 (76.5%)	2,159 (20.7%)	1	296 (2.8%)	1
Distance from clinic						
						273.97
0-9km	106,095 (42.1%)	75,537 (71.3%)	23,442 (22.1%)	0.81 (0.75-0.87)*	7,116 (6.7%)	1.32 (1.14-1.53)*
10-24km	81,407 (32.3%)	56,393 (69.3%)	19,378 (23.8%)	0.86 (0.8-0.92)*	5,636 (6.9%)	1.3 (1.12-1.51)*
25-49km	45,871 (18.2%)	31,780 (69.3%)	11,285 (24.6%)	0.9 (0.84-0.97)*	2,806 (6.1%)	1.24 (1.07-1.44)*
50-74km	10,790 (4.3%)	7,336 (68%)	2,733 (25.3%)	0.88 (0.81-0.95)*	721 (6.7%)	1.15 (0.98-1.36)
75-99km	3,302 (1.3%)	2,202 (66.7%)	887 (26.9%)	0.95 (0.86-1.05)	213 (6.4%)	1.18 (0.96-1.44)
>100km	4,311 (1.7%)	2,918 (67.7%)	1,186 (27.5%)	1	207 (4.8%)	1
Socioeconomic status						
						89.13*
Low	82,726 (32.9%)	58,211 (70.4%)	18,934 (22.9%)	1.01 (0.99-1.04)	5,581 (6.7%)	1.1 (1.06-1.16)*
Mid-range	70,898 (28.2%)	48,956 (69.1%)	16,875 (23.8%)	1.02 (0.99-1.05)	5,067 (7.1%)	1.07 (1.03-1.12)*
High	98,152 (39%)	68,999 (70.3%)	23,102 (23.5%)	1	6,051 (6.2%)	1

Notes:

* = p<0.05

TABLE 2. Attendance patterns by appointment time and day, patient, provider, appointment and cancellation type

	Total	Completed	Cancelled	Cancelled	FTA	FTA	χ^2
	N (%)	N (%)	N (%)	OR (95% CI)	N (%)	OR (95% CI)	
Appointment time							272.22*
8-11am	80,598 (32%)	56,946 (70.7%)	17,852 (22.1%)	1.01 (0.98-1.04)	5,800 (7.2%)	1.27 (1.21-1.33)*	
12-3pm	82,063 (32.6%)	56,502 (68.9%)	20,615 (25.1%)	1.16 (1.12-1.2)*	4,946 (6%)	1.08 (1.09-1.14)*	
4-7pm	89,115 (35.4%)	62,718 (70.4%)	20,444 (22.9%)	1	5,953 (6.7%)	1	
Appointment day							272.22*
Monday	54,472 (1.6%)	38,357 (70.4%)	12,276 (22.5%)	0.82 (0.79-0.86)*	3,839 (7.1%)	1.1 (1.03-1.17)*	
Tuesday	58,089 (23.1%)	41,059 (70.7%)	13,296 (22.9%)	0.85 (0.81-0.88)*	3,734 (6.1%)	0.93 (0.87-0.99)*	
Wednesday	43,284 (17.2%)	30,431 (70.3%)	10,046 (23.2%)	0.94 (0.91-0.97)*	2,807 (6.5%)	0.89 (0.85-0.94)*	
Thursday	54,055 (21.5%)	37,484 (69.3%)	13,385 (24.8%)	0.91 (0.87-0.94)*	3,186 (5.9%)	0.89 (0.83-0.95)*	
Friday	41,876 (16.6%)	28,835 (68.9%)	9,908 (23.7%)	1	3,133 (7.4%)	1	
Patient type							784.4*
Private	56,756 (22.5%)	37,065 (65.3%)	15,099 (26.6%)	1.17 (1.15-1.2)*	4,592 (8.1%)	0.94 (0.91-0.98)	

Public	195,020 (77.5%)	139,101 (71.3%)	43,812 (22.5%)	1	12,107 (6.2%)	1	
Provider type							301.51*
Dental Prosthetics	6,261 (2.5%)	4,462 (71.3%)	1,603 (25.6%)	1.11 (1.04-1.18)*	196 (3.1%)	0.74 (0.63-0.86)*	
Dentistry Year 3	37,036 (14.7%)	26,015 (70.2%)	8,254 (22.3%)	0.74 (0.71-0.78)*	2,767 (7.5%)	0.92 (0.85-0.99)*	
Dentistry Year 4	109,746 (43.6%)	76,551 (69.8%)	26,471 (24.1%)	0.96 (0.93-0.99)*	6,724 (6.1%)	1.04 (0.98-1.09)	
Dentistry Year 5	98,733 (39.2%)	69,138 (70%)	22,583 (22.9%)	1	7,012 (7.1%)	1	
Appointment type							1,959.21*
Admissions	4,137 (2.1%)	2,717 (65.7%)	803 (19.4%)	0.57 (0.52-0.62)*	617 (14.9%)	2.17 (1.93-2.44)*	
Emergency	17,972 (9.1%)	13,621 (75.8%)	2,829 (15.7%)	0.45 (0.43-0.48)*	1,522 (8.5%)	1.2 (1.09-1.31)*	
Endodontics	15,689 (7.9%)	10,573 (67.4%)	4,144 (26.4%)	0.9 (0.86-0.94)*	972 (6.2%)	0.97 (0.88-1.06)	
Examination	51,809 (26.2%)	36,943 (71.3%)	11,405 (22%)	0.72 (0.69-0.74)*	3,461 (6.7%)	1.12 (1.04-1.2)*	
Operative	30,954 (15.7%)	21,080 (68.1%)	7,680 (24.8%)	0.89 (0.85-0.93)*	2,194 (7.1%)	1.19 (1.1-1.29)*	
Oral Surgery	12,666 (6.4%)	8,893 (70.2%)	3,045 (24%)	0.81 (0.77-0.85)*	728 (5.8%)	0.95 (0.86-1.05)	
Pediatrics	8,279 (4.2%)	5,833 (70.4%)	1,685 (20.4%)	0.69 (0.63-0.75)*	761 (9.2%)	0.91 (0.79-1.04)	
Periodontics	16,806 (8.5%)	11,519 (68.5%)	4,286 (25.5%)	0.92 (0.88-0.96)*	1,001 (6%)	1.23 (1.12-1.35)*	

Preventive	9,954 (5%)	7,183 (72.2%)	2,072 (20.8%)	0.73 (0.69-0.78)*	699 (7%)	1.07 (0.96-1.2)
Prosthodontics	29,253 (14.8%)	20,362 (69.6%)	7,730 (26.4%)	1	1,161 (4%)	1
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Cancellation type						
Patient cancelled	25,533 (43.3%)					
Student cancelled	20,536 (34.9%)					
Rescheduled	8,411 (14.3%)					
Clinic cancelled	4,369 (7.4%)					
No reason listed	62 (0.1%)					

Notes:

* = $p < 0.05$