

# DO PATIENTS WITH VARYING DEMOGRAPHIC AND REGIONAL CHARACTERISTICS EQUALLY MISS APPOINTMENTS ACROSS DENTAL SPECIALTIES?

*Hind M. Albaloushi, MPH, BS*

*Omar Da'ar, PhD*

College of Public Health & Health Informatics,  
King Saud Bin Abdulaziz University for Health Sciences,  
National Guard Health Affairs (NGHA), Riyadh, Saudi Arabia

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## **Abstract:**

**Objectives:** Since dental practice is unique and procedure-based, understanding the problem of missed dental appointment among patients in Health care facilities is crucial. The main purpose of this study was to understand whether patients with varying demographic, regional, and appointment characteristics equally missed dental appointments across dental specialties at King Faisal Specialist Hospital & Research Center (KFSH&RC), Riyadh.

**Method:** After institutional approval, we retrospectively analyzed patients' missed dental appointments. We selected a sample of 3185 patients with "No show" or missed dental appointments for 2012. We employed chi-square goodness of fit test to establish whether there were statistically significant relationships between the type of dental specialty a patient missed and various patient characteristics. Additionally, we employed Cramer's V to measure the strength of the relationship. Both techniques were useful in making statistical inferences from the data about the larger population based on the sample.

**Results:** The findings showed that there are statistically significant relationships between the type of dental specialty a patient missed and various patient characteristics. Demographic, regional, registration characteristics of patients, appointment seasons and sessions, and chance of missed appointment in the various dental specialties are associated. However, with exception of age, all the other factors appear to have small effect on chance of missed appointments across dental specialties.

**Conclusion:** With current problem of 'no show', the findings of this study is expected to inform KFSH&RC and other institutions to establish policies

and guidelines to improve both the rate of "honored" appointments and minimize the many unused visit hours.

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**Keywords:** Missed dental appointments; no-shows; dental specialties, chi-square test

## **Introduction**

The problem of missed dental appointment or 'no-show' is defined as failure to attend appointments without giving advance notice or arriving late at a clinic or hospital. The length of time a patient is considered late, or simply 'no-show', varies from facility to facility, depending on policy. The length of time typically ranges from 10 minutes to an hour in most hospitals in Riyadh.

The problem of no-show is not particular to dental procedures. In clinical medicine, for example, research shows that failure to attend medical appointments increases the cost of medical care (More, Wilson-Witherspoon, & Probst, 2001). No-shows have negative ramifications on patient health care, continuity, clinic productivity, and learning experiences for residency programs (Weinger, Lin, McMurrich, Rodriguez, & Yi, 2005). Research shows that some of the factors associated with non-attendance in clinical medicine include age, history of non-attendance and time of appointment in terms of morning or afternoon sessions (Giunta et al, 2013). Unavailability of transportation is another factor responsible for missed appointments (Van der Meer & Loock, 2008).

Like clinical medicine, dental no-shows have a negative impact on hospitals and clinics not only in Saudi Arabia, but throughout the world. Missed appointments are not only a major cause of inefficiency in healthcare delivery, but also come with considerable financial costs for the health system, which causes delays in diagnosis and appropriate treatment (Car, Gurol-Urganci, de Jongh, Vodopivec-Jamsek, & Atun, 2012). In particular, missed dental appointments have negative socioeconomic and health consequences on individual and institutions, especially in terms of maintaining oral health and treating oral diseases, time lost from work or school and reduction in normal activities (Gift, Reisine, & Larach, 1992). Because of the unique nature of dental practice (procedure-based practice), the period for dental appointment is crucial and hence the negative impact of missed appointments can be far-reaching. A missed dental appointment can make a patient deny him or herself the benefit of treatment, leading to the possibility of oral diseases (Lacy, Paulman, Reuter, & Lovejoy, 2004; Penneys & Glaser, 1999).

Like the rest of the world, dental no-shows are common in Saudi Arabia impacting health care facilities negatively. Institutions, including the

dental clinic at KFSH&RC put in place some guidelines for “No Show” to ensure “honored” appointments for smooth operations. Such policies include sending short text message (SMS) as a reminder 48 hours prior to the appointment, surcharges, documentation of any “no show” or cancellation of appointment in the medical record, and removal from the dental clinic records. Guidelines also include the requirement for patients to provide a reason or signature, especially those on administrative eligibility exception, and some protocol patients.

Many studies examined possible explanatory factors related to high frequency of missed/cancelled dental appointments (Skaret, Raadal, Kvale, & Berg, 2000). Patients’ history of missed or forgetfulness of appointments, working or without specified occupation, negative beliefs of dentists, and high caries experiences are linked to no-shows (Skaret et al, 2000). Other studies have looked at demographic factors. For example, associations between dental anxieties, dental treatment due to toothache, and missed dental appointments have been considered on the basis of age (Wogelius & Poulsen, 2005). Frequency of missed or cancelled appointments had been shown to linearly increase with ages from 12-18-year-olds (Skaret, Raadal, Kvale, & Berg, 1998), yet other studies looked at such factors as dental behavior management problems among children (Klingberg, Löfqvist, Bjarnason, & Norén, 1994).

Several studies have also attempted to understand missed dental appointment and investigated various factors affecting utilization of dental health services and satisfaction. Unavailability of transportation and underutilization of dental care are associated with missed appointments (Maserejian, Trachtenberg, Link, & Tavares, 2008). Some of these studies looked at location (Al-Hussyeen, 2010), age (Alaki, Alotaibi, Almabadi, & Alanquri, 2012), gender (Quteish, 2002; AL-Omari & AL-Omiri, 2009; AlBarakati, 2009), and seasons such as Ramadan (AlBarakati, 2009).

Previous studies in the region and Saudi Arabia concentrated more on the consequences of missed dental appointments. Additionally, these studies were limited in coverage and application, concentrating on college students and characteristics such as gender. In order to minimize the problem of missed dental appointment, it needs to be understood from broader patient characteristics in Saudi Arabia. The motivation for this study is therefore twofold; first, the problem of missed dental appointment remains acute and individuals who miss or cancel appointments may represent a risk group for future dropout from dental care. Second, there is generally a scarcity of studies to understand the problem, in terms of broader patient characteristics in Riyadh, Saudi Arabia. The present study carefully delves into patients’ characteristics in order to help inform hospital policymakers in formulating mechanisms to minimize or stamp out the problem of missed dental

appointment. The primary purpose of this study is to understand whether patients with varying characteristics equally missed dental appointments in various dental specialties. Such characteristics include patients' registration type (employees and dependents, protocols, and ordinary), gender, age category (adults or children), session of appointment (afternoon or morning), seasonality of the appointment (Ramadan, summer vacation, and school vacation) and location (Riyadh and outside Riyadh). Understanding of the relationship between patients' characteristics and missed dental appointments is envisaged to provide hospitals with evidence-based results in order to mitigate the many unused visit hours. Thus, the evidence of this study will inform guidelines and action plans by hospitals in the Kingdom.

### **Setting of the study**

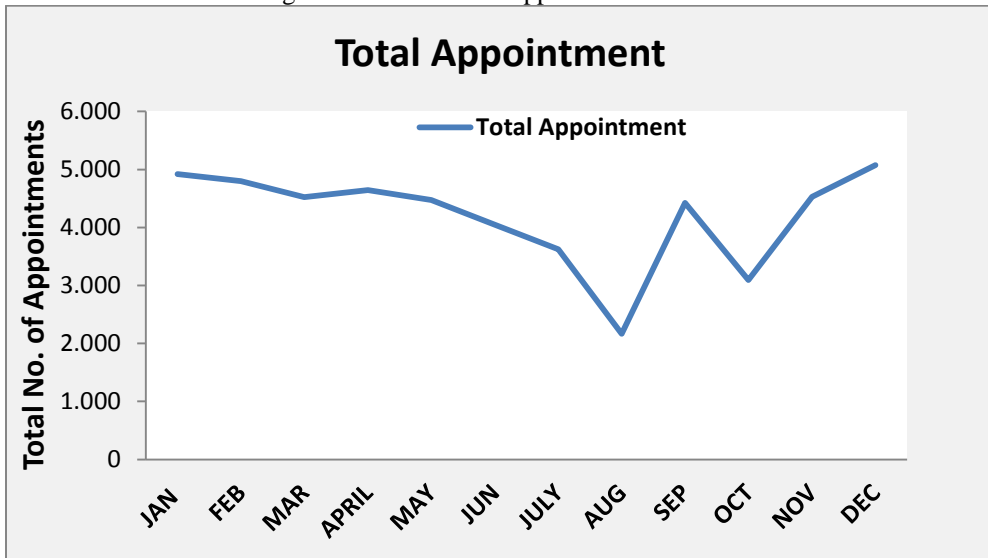
In light of the foregoing literature on missed dental appointment, we conducted this study in Dentistry Department at King Faisal Specialist Hospital & Research Center (KFSH&RC) in Riyadh by retrospectively looking at all patient missed dental appointments in 2012.

This Dentistry Department engages in clinical practice in a thirty-two operatory clinic in the out-patient wing of the main hospital and Center. It has an average of 200 sessions per week and has dentists (consultants, associate consultants, and general practice residents), dental hygienists, assistants, registered nurses, laboratory technicians, secretaries, and other support staff. The services provided at KFSH&RC are General Dentistry, Specialty Dentistry, including Oral & Maxillofacial Surgery, Orthodontics, Pediatric Dentistry, Endodontic, Periodontics, Prosthodontics, and Dental Hygiene.

### **Total Dental Appointments versus Missed Dental Appointments at KFSH&RC**

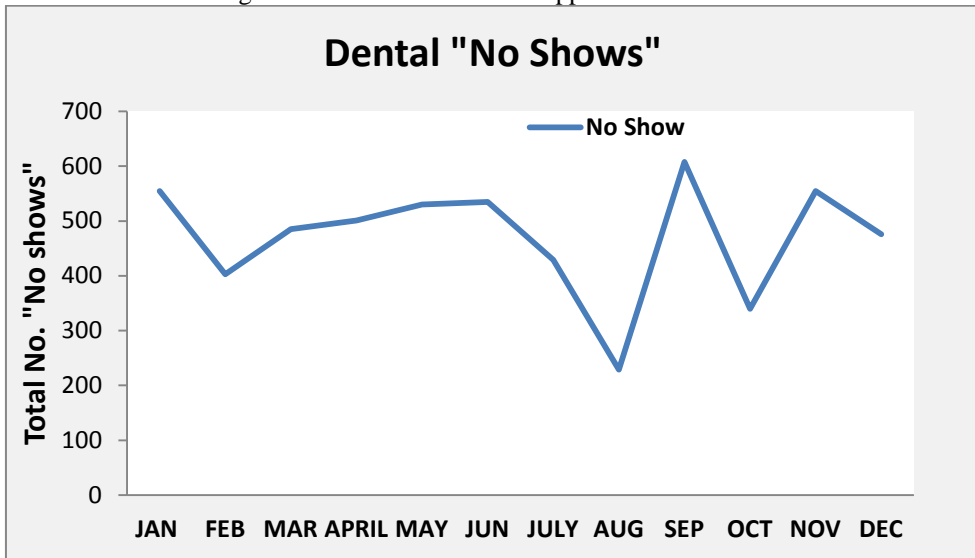
Like any other major hospital, the problem of missed appointment is common at KFSH&RC. Nearly 4,019 "No show" dental appointments have been recorded at Dental Clinic in KFSH&RC in 2012, giving an average monthly "No show" of 335. Regardless of the negative impact, the dental clinic utilizes the "No show" time to accommodate non-scheduled patient throughout the day. For instance, the clinic uses "No show" times to accommodate patients in pain or requiring urgent consultations or surgical clearance treatment (13), patients from outside Riyadh who are late, and patients with appointments in the same hospital. Figure 1 shows the trend of total dental appointments at KFSH&RC in 2012.

Figure 1: Total Dental Appointments in 2012



The total dental appointments steadily declined in the first half of 2012 with sharp decline in July and August. This sharp decline at the start of the first half of 2012 coincided with second school vacation for one week, high travel season and leave period of 50 percent of healthcare providers. In addition, the severe decline in the month of August coincided with the Holy month of Ramadan in which all government and non-governmental departments reduce working hours. There was a sharp upward trend in the month of September because schools open, people return from vacations, the facility fully resumes its operations and Ramadan is over. Then there is a decline in the number of total appointments in the month of October. This decline coincides with *Eid Al-Adha* holiday where typically dental staff enjoys 10 days of celebration. However, the dental clinic usually remains open for emergency and clearance patients. Figure 2 depicts dental “No shows” at KFSH&RC in 2012.

Figure 2: "No Shows" Dental Appointments in 2012



The “*No shows*” dental appointments sharply decline from January to February in 2012 because this coincided with school midterm exam and vacation .This was followed by a period of gradual increase (February to June) –because schools remain open and vacations are minimal. Then there was a sharp decline in the second half of 2012. “No shows” declined from June to August 2012. Again, this trend was much like that of the total appointments. The sharp decline at the start of the second half of 2012 also coincided with summer vacation, school closures, and high travel season. In addition, the severe decline in the month of August coincided with the Holy month of Ramadan in which patients fast. Again, there was a sharp upward trend in the month of September because schools open, people return from vacations and Ramadan is over. Then there is a decline in the number of total appointments in the month of October. This decline coincided with *Eid Al-Adha* holiday where the majority of patients may celebrate for *Eid Al-Adha* holiday. A sharp increase then follows in November and a decline in December.

### Methods and Materials

The method of this study involves examining whether patients with varying demographic and regional characteristics equally miss appointments across dental specialties at KFSH&RC. After consent was granted, we obtained 3185 “No shows” or missed dental appointments from KFSH&RC warehouse. The data covered 2012 as this was the most recent year for which there complete and well-kept records are available.

The dentistry department at KFSH&RC defines, "*No show*" as failure to attend an appointment without giving advance notice or arriving at the clinic late. Specifically, any patient who is 10 minutes late for a 30-minute appointment; 15 minutes late for a 45-minute appointment; 20 minutes late for a 60-minute or more is considered to have missed a dental appointment. We use these definitions as inclusion criteria for our analysis. Thus, we include all patients meeting the length of dental appointment as defined in no-show, as well as patients accepted for medical/surgical care at KFSH&RC and having a well-defined relationship between their systemic health problem and their oral health. Also included are patients who need dental tertiary care who suffer significant genetic, congenital, traumatic, or surgical maxillofacial (oral) deformities and require comprehensive reconstructive care.

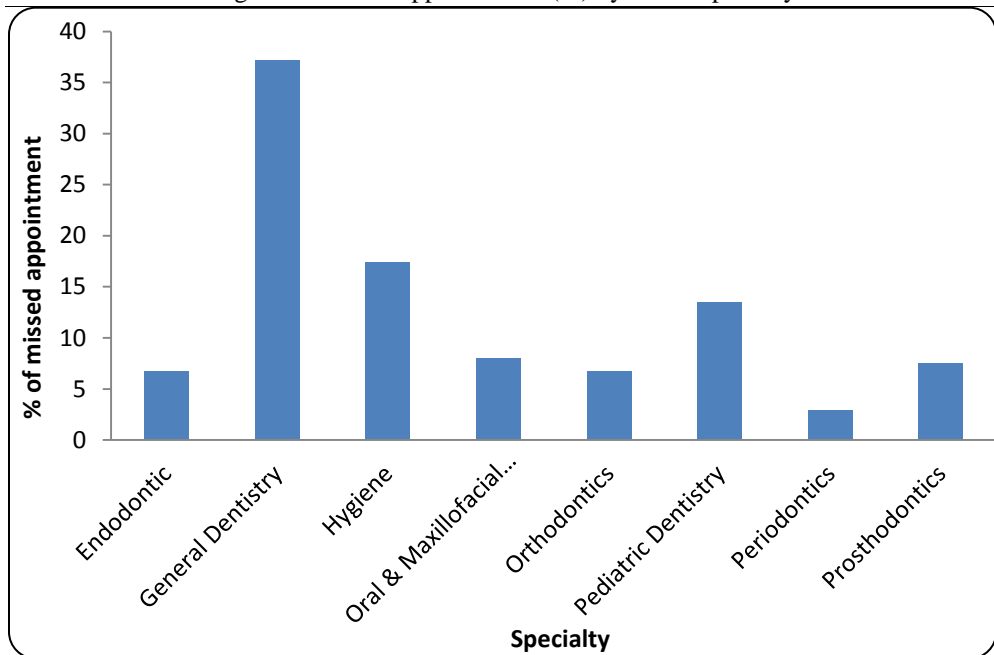
The variables of interest were categories of dental specialties including General Dentistry, Oral & Maxillofacial Surgery, Orthodontics, Pediatric Dentistry, Endodontic, Periodontics, Prosthodontics, Dental Hygiene, and X-ray. We also categorized patients along other variables of interests, including very important persons (VIPs) or Protocol patients. This category of patients comprised of special group of patient scheduled and managed by the Hospital Protocol Office, employees and their dependents who received basic dental care provided to them and their dependents as per Hospital policy and by-laws; and ordinary patients. We also had children and adults patients of all gender, and from different regions in the Kingdom. We coded all variables and entered in the (IBM- SPSS- STATISTICS 20). We coded the variables in a manner to conform to statistical technique and to allow us to answer the central research question of whether one category of patients is more likely to miss dental appointments, or whether a given characteristic of a patient category is associated with a missed dental appointment.

We employed a Chi-square ( $X^2$ ) test for independence as the underlying inferential statistic technique. We chose this method for analysis because the variables of interest were nominal, each having two or more possible values. Using data from King Faisal Specialist Hospital & Research Center (KFSH&RC), our hypothesis was to test whether patients with varying demographic and regional characteristics equally miss appointments across dental specialties.

## Results

As shown by Figure 3, the most frequent 'no-shows' were in general dentistry (37.2%), followed by nearly half as much frequent no-shows in general hygiene (17.4%). The other departments had much less frequent 'no-shows'.

Figure 3: Missed appointments (%) by dental specialty



Next we report the relationship between the various patient characteristics and missed appointments across various dental specialties.

Tables 1 through Table 6 show Pearson chi-square tests, depicting the relationship between the various patient characteristics and missed appointments across various dental specialties is significant. Indeed, children versus adults and male versus female patients do not equally miss dental appointments across the various specialties at KFSH&RC. For instance, 35 percent of male compared to 39 percent of female missed appointments in general dentistry, while 6.3 percent of children compared to 45 percent of adults missed appointments in the same specialty. The chi-square statistics associated with results 14.74 and 1744 respectively. The probability associated with each of these chi-square statistics is less than 0.01 indicating that there is a strong relationship between whether or not patients miss appointments across dental specialties and their characteristics (see Tables 1 & 2 and Tables A1 & A2 respectively).

In addition, 16 percent of patients from outside Riyadh (with appointments at KFSH&RC) compared to 8 percent of patients from Riyadh missed appointments in endodontics, while 7.5 percent of patients with appointments in the afternoon compared to 6 percent of patients with appointments in the morning missed appointments in the same specialty. The chi-square statistics associated with results 63.838 and 22.433 respectively. The probability associated with each of these chi-square statistics is less than



0.01 indicating that there is a strong relationship between whether or not patients miss appointments across dental specialties and their characteristics (see Tables 3 & 4 and Tables A3 & A4 respectively).

The relationship between patient registration type and the season of their appointments on one hand, and missed appointments on the other, across various dental specialties is significant. However, we do not report here these results in the interest of space. For results, see Tables 5 & 6 and Tables A5 & A64 respectively.

Table 1: Chi-Square Tests for Specialties by gender

	$\chi^2$	df	<i>p-value</i>
Pearson Chi-Square	14.750 <sup>a</sup>	7	0.039
Likelihood Ratio	14.759	7	0.039
N of Valid Cases	3185		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 45.66.

Table 2: Chi-Square Tests for Specialties by age category

	$\chi^2$	df	<i>p-value</i>
Pearson Chi-Square	1744.809 <sup>a</sup>	7	0.000
Likelihood Ratio	1478.618	7	0.000
N of Valid Cases	3185		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.77.

Table 3: Chi-Square Tests for Specialties by region (Riyadh vs. Outside Riyadh)

	$\chi^2$	df	<i>p-value</i>
Pearson Chi-Square	63.838 <sup>a</sup>	7	0.000
Likelihood Ratio	62.91	7	0.000
N of Valid Cases	3185		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.20.

Table 4: Chi-Square Tests for Specialties by appointment session

	$\chi^2$	df	<i>P-value</i>
Pearson Chi-Square	22.433 <sup>a</sup>	7	0.002
Likelihood Ratio	22.546	7	0.002
N of Valid Cases	3183		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 40.37.

Table 5: Chi-Square Tests for Specialties by patient registration type

	$\chi^2$	df	<i>P-value</i>
Pearson Chi-Square	158.994 <sup>a</sup>	14	0.000
Likelihood Ratio	157.837	14	0.000
N of Valid Cases	3185		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.35.

Table 6: Chi-Square Tests for Dental Specialties by Season

	$\chi^2$	df	<i>P-value</i>
Pearson Chi-Square	24.511 <sup>a</sup>	7	0.001
Likelihood Ratio	26.906	7	0.000
N of Valid Cases	3185		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.46.

### Effect sizes

Although the relationship between the various factors (demographic, regional characteristics of patients and seasonality and sessions of their appointments) on one hand, and missed appointments in the various dental specialties is significant, we further measure the strength of the relationship. Table 9 presents effect sizes of the strength of that relationship using Cramer's V. The statistical results reveal that with exception of age, all the other factors have small effect on chance of missed appointments in the various dental specialties. This implies that indeed, children and adults do not equally miss dental appointments across the various specialties. This result also implies that the differences in the missed appointments of the other factors are due to a change of factors.

Table 7: Effect Size (Cramer's V)

Independent variable	Value	Approx. Sig.
Gender	0.068	0.039
Age	0.740	0.000
Session	0.084	0.002
Season	0.071	0.000
Registration type	0.135	0.000
Region	0.081	0.000

### Discussion

Studying missed dental appointments in terms of broader patient characteristics is crucial for understanding the problem of missed appointment among patients. While the results reveal that the relationship between the various factors (demographic, regional characteristics of patients, seasons and sessions of their appointments) on one hand and missed appointments in the various dental specialties is significant, these relationships are mostly due to a change of factors. The results may reveal an underlying issue about the problem of missed dental appointment in relation to facility characteristics.

### Conclusion and Recommendations

In conclusion, we revisited our research question of whether patients with various characteristics equally miss dental appointments across types of

dental specialty. We consider this question using a chi-square goodness of fit test ( $X^2$ ) and Cramer’s V as the underlying inferential statistic techniques. The findings show that there are statistically significant relationships between the type of dental specialty a patient missed and various patient characteristics. The various factors (demographic, regional characteristics of patients and season of appointment and sessions of their appointments) and chance of missed appointment in the various dental specialties are associated. However, with exception of age, all the other factors appear to have small effect on chance of missed appointments in the various dental specialties.

With the current findings, there are ways the gathered data can inform the reduction of no-shows in general. Finally, with current problems of ‘no shows’ in dental appointments, the findings of this study are expected to inform KFSH&RC and other institutions to establish policies and guidelines to improve both the rate of “honored appointments” and minimize the many unused visit hours.

Appendices: contingency tables of patient characteristics by dental specialties

A1: Patient gender by missed dental specialty

		Dental specialties								Total
		1	2	3	4	5	6	7	8	
Male	Count	545	125	98	221	97	42	116	303	1547
	Expected Count	576.5	123.9	103	208.4	103.5	45.7	116.6	269.6	1547
	% within GENDER	35.20%	8.10%	6.30%	14.30%	6.30%	2.70%	7.50%	19.60%	100.00%
Female	Count	642	130	114	208	116	52	124	252	1638
	Expected Count	610.5	131.1	109	220.6	109.5	48.3	123.4	285.4	1638
	% within GENDER	39.20%	7.90%	7.00%	12.70%	7.10%	3.20%	7.60%	15.40%	100.00%
Total	Count	1187	255	212	429	213	94	240	555	3185
	Expected Count	1187	255	212	429	213	94	240	555	3185
	% within GENDER	37.30%	8.00%	6.70%	13.50%	6.70%	3.00%	7.50%	17.40%	100.00%

Key: Specialties: (1) General, (2) Oral & Maxillofacial, (3) Orthodontics, (4) Pediatrics, (5) Endodontics, (6) Periodontics,(7) Prosthodontics, (8) Hygiene

A2: Patient age by missed dental specialty

		Specialties								Total
		1	2	3	4	5	6	7	8	
Children	Count	38	39	19	390	18	1	2	95	602
	Expected Count	224.4	48.2	40.1	81.1	40.3	17.8	45.4	104.9	602
	% within AGE	6.30%	6.50%	3.20%	64.80%	3.00%	0.20%	0.30%	15.80%	100.00%
Adult	Count	1149	216	193	39	195	93	238	460	2583
	Expected Count	962.6	206.8	171.9	347.9	172.7	76.2	194.6	450.1	2583
	% within AGE	44.50%	8.40%	7.50%	1.50%	7.50%	3.60%	9.20%	17.80%	100.00%
Total	Count	1187	255	212	429	213	94	240	555	3185
	Expected Count	1187	255	212	429	213	94	240	555	3185
	% within AGE	37.30%	8.00%	6.70%	13.50%	6.70%	3.00%	7.50%	17.40%	100.00%

Key: Specialties: (1) General, (2) Oral & Maxillofacial, (3) Orthodontics, (4) Pediatrics, (5) Endodontics, (6) Periodontics, (7) Prosthodontics, (8) Hygiene

A3: Patient session of appointment by missed dental specialty

		Specialties								Total
		1	2	3	4	5	6	7	8	
Afternoon	Count	496	87	100	202	103	36	119	224	1367
	Expected Count	508.9	109.5	91	184.2	91.5	40.4	103.1	238.4	1367
	% within Session	36.30%	6.40%	7.30%	14.80%	7.50%	2.60%	8.70%	16.40%	100.00%
Morning	Count	689	168	112	227	110	58	121	331	1816
	Expected Count	676.1	145.5	121	244.8	121.5	53.6	136.9	316.6	1816
	% within Session	37.90%	9.30%	6.20%	12.50%	6.10%	3.20%	6.70%	18.20%	100.00%
Total	Count	1185	255	212	429	213	94	240	555	3183
	Expected Count	1185	255	212	429	213	94	240	555	3183
	% within Session	37.20%	8.00%	6.70%	13.50%	6.70%	3.00%	7.50%	17.40%	100.00%

Key: Specialties: (1) General, (2) Oral & Maxillofacial, (3) Orthodontics, (4) Pediatrics, (5) Endodontics, (6) Periodontics, (7) Prosthodontics, (8) Hygiene

A4: Patient season of appointment by missed dental specialty

		Specialties								Total
		1	2	3	4	5	6	7	8	
Fasting	Count	92	13	11	26	17	4	8	14	185
	Expected Count	68.9	14.8	12.3	24.9	12.4	5.5	13.9	32.2	185
	% within Season	49.70%	7.00%	5.90%	14.10%	9.20%	2.20%	4.30%	7.60%	100.00%
Summer leave	Count	139	28	17	53	26	10	31	46	350
	Expected Count	130.4	28	23.3	47.1	23.4	10.3	26.4	61	350
	% within Season	39.70%	8.00%	4.90%	15.10%	7.40%	2.90%	8.90%	13.10%	100.00%
Exam period	Count	114	17	20	41	21	2	16	50	281
	Expected Count	104.7	22.5	18.7	37.8	18.8	8.3	21.2	49	281
	% within Season	40.60%	6.00%	7.10%	14.60%	7.50%	0.70%	5.70%	17.80%	100.00%
School holiday	Count	61	10	8	10	9	2	7	12	119
	Expected Count	44.3	9.5	7.9	16	8	3.5	9	20.7	119
	% within Season	51.30%	8.40%	6.70%	8.40%	7.60%	1.70%	5.90%	10.10%	100.00%
Other leave	Count	781	187	156	299	140	76	178	433	2250
	Expected Count	838.5	180.1	149.8	303.1	150.5	66.4	169.5	392.1	2250
	% within Season	34.70%	8.30%	6.90%	13.30%	6.20%	3.40%	7.90%	19.20%	100.00%
Total	Count	1187	255	212	429	213	94	240	555	3185
	Expected Count	1187	255	212	429	213	94	240	555	3185
	% within Season	37.30%	8.00%	6.70%	13.50%	6.70%	3.00%	7.50%	17.40%	100.00%

Key: Specialties: (1) General, (2) Oral & Maxillofacial, (3) Orthodontics, (4) Pediatrics, (5) Endodontics, (6) Periodontics, (7) Prosthodontics, (8) Hygiene

A5: Patient registration type by missed dental specialty

		Specialties								Total
		1	2	3	4	5	6	7	8	
Employees	Count	189	18	1	0	28	15	27	62	340
	Expected Count	126.7	27.2	22.6	45.8	22.7	10	25.6	59.2	340
	% within PRT	55.6 %	5.3%	0.3%	0.0%	8.2%	4.4 %	7.9%	18.2 %	100.0 %
Dependents	Count	206	22	57	92	59	9	24	75	544
	Expected Count	202.7	43.6	36.2	73.3	36.4	16.1	41	94.8	544
	% within PRT	37.9 %	4.0%	10.5 %	16.9 %	10.8 %	1.7 %	4.4%	13.8 %	100.0 %
Retired employees	Count	8	0	0	0	1	1	5	6	21
	Expected Count	7.8	1.7	1.4	2.8	1.4	0.6	1.6	3.7	21
	% within PRT	38.1 %	0.0%	0.0%	0.0%	4.8%	4.8 %	23.8 %	28.6 %	100.0 %
Retired	Count	20	2	2	5	1	0	2	3	35
	Expected Count	13	2.8	2.3	4.7	2.3	1	2.6	6.1	35
	% within PRT	57.1 %	5.7%	5.7%	14.3 %	2.9%	0.0 %	5.7%	8.6%	100.0 %
Ordinary	Count	559	188	87	276	108	40	137	296	1691
	Expected Count	630.2	135.4	112.6	227.8	113.1	49.9	127.4	294.7	1691
	% within PRT	33.1 %	11.1 %	5.1%	16.3 %	6.4%	2.4 %	8.1%	17.5 %	100.0 %
Protocol (V.I.P.)	Count	205	25	65	56	16	29	45	113	554
	Expected Count	206.5	44.4	36.9	74.6	37	16.4	41.7	96.5	554
	% within PRT	37.0 %	4.5%	11.7 %	10.1 %	2.9%	5.2 %	8.1%	20.4 %	100.0 %
Total	Count	1187	255	212	429	213	94	240	555	3185
	Expected Count	1187	255	212	429	213	94	240	555	3185
	% within PRT	37.3 %	8.0%	6.7%	13.5 %	6.7%	3.0 %	7.5%	17.4 %	100.0 %

Key: Specialties: (1) General, (2) Oral & Maxillofacial, (3) Orthodontics, (4) Pediatrics, (5) Endodontics, (6) Periodontics, (7) Prosthodontics, (8) Hygiene

A6: Patient region of residence by missed dental specialty

		Specialties								Total
		1	2	3	4	5	6	7	8	
Outside Riyadh	Count	272 <sub>a</sub>	101 <sub>b</sub>	32 <sub>c</sub>	131 <sub>d</sub>	33 <sub>c</sub>	16 <sub>a,c</sub>	59 <sub>a,d</sub>	142 <sub>a,d</sub>	786
	Expected Count	292.9	62.9	52.3	105.9	52.6	23.2	59.2	137.0	786.0
	% within Region	34.6%	12.8%	4.1%	16.7%	4.2%	2.0%	7.5%	18.1%	100.0%
	% within Specialties	22.9%	39.6%	15.1%	30.5%	15.5%	17.0%	24.6%	25.6%	24.7%
Riyadh	Count	915 <sub>a</sub>	154 <sub>b</sub>	180 <sub>c</sub>	298 <sub>d</sub>	180 <sub>c</sub>	78 <sub>a,c</sub>	181 <sub>a,d</sub>	413 <sub>a,d</sub>	2399
	Expected Count	894.1	192.1	159.7	323.1	160.4	70.8	180.8	418.0	2399.0
	% within Region	38.1%	6.4%	7.5%	12.4%	7.5%	3.3%	7.5%	17.2%	100.0%
	% within Specialties	77.1%	60.4%	84.9%	69.5%	84.5%	83.0%	75.4%	74.4%	75.3%
Total	Count	1187	255	212	429	213	94	240	555	3185
	Expected Count	1187.0	255.0	212.0	429.0	213.0	94.0	240.0	555.0	3185.0
	% within Region	37.3%	8.0%	6.7%	13.5%	6.7%	3.0%	7.5%	17.4%	100.0%
	% within Specialties	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Each subscript letter denotes a subset of Specialties categories whose column proportions do not differ significantly from each other at the 0.05 level.

Key: Specialties: (1) General, (2) Oral & Maxillofacial, (3) Orthodontics, (4) Pediatrics, (5) Endodontics, (6) Periodontics, (7) Prosthodontics, (8) Hygiene

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