

## Patient Satisfaction in a Dental School Setting

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Received Date: August 22, 2018; Accepted Date: September 02, 2018; Published Date: September 05, 2018

Citation: Nichole Schiro (2018) Patient Satisfaction in a Dental School Setting. J Dent Oral Health 5: 1-8.

### Abstract

**Purpose/Objectives:** This study compared patient satisfaction in a School of Dentistry Faculty Practice (DFP) and 3<sup>rd</sup> and 4<sup>th</sup> year DDS student clinics.

**Methods:** A survey form was distributed over a 12-week period to patients waiting in the 3<sup>rd</sup> and 4<sup>th</sup> year student clinics and the DFP. Descriptive and bivariate statistics were used to compare the responses.

**Results:** 292 patients completed the surveys: DFP=99; 4<sup>th</sup> year clinic=66 and 3<sup>rd</sup> year clinic=127. Patients in the three clinics did not differ significantly in items addressing communication. The three groups also did not differ significantly in the responses regarding administration and transportation. Statistically significant differences among the three groups were observed related to timeliness of treatment but patients in all three groups would recommend their respective clinics to others. For all of the timeliness items, but one, DFP received the highest proportion of positive responses while the 4<sup>th</sup> year clinic received the lowest. Interestingly, the 4<sup>th</sup> year clinic also received the lowest percentage of positive responses except for one item relating to the interactions with the dental provider and staff items.

**Conclusion:** Overall, patients in all clinical groups were satisfied with their treatment and would recommend others to receive dental care in the student clinics and the DFP. There was a general progressive improvement of patient satisfaction from the student clinics to the DFP. However, this survey identified opportunities for patient satisfaction improvement in all clinic areas of the School of Dentistry.

**Keywords:** Patient satisfaction; Dental clinics; Dental students; Dental faculty

## Introduction

Healthcare, in particular dental care is changing from the traditional provider-based structure to a more patient-centered model. In order for dentists to be successful, patient satisfaction is key. Satisfaction has been defined as a feeling of pleasure, or disappointment, resulting from comparing a product's perceived performance or outcome in relation to his or her expectations [1]. Previous studies have identified patient's having less optional time, additional access to third-party dental insurance and higher expectations of dental providers as factors affecting patient satisfaction [2-4]. The patient's physical and psychological treatment experiences play a role in patient satisfaction, making it crucial for the dentist to focus on the patient's values and addressing their area of concern [5-7]. Interpersonal and communication skills are equally as important as clinical skills. Even with the current technology and novel ways to promote a practice, word of mouth is still a popular form of marketing a dental office. A recommendation by a friend or family member is the second most common factor behind a dentist's professional skills in deciding which practice to seek care [8].

Patient satisfaction not only affects private practices but also dental schools. Most dental schools, including the University of North Carolina School of Dentistry (UNC-SOD), have adopted the comprehensive care model, where each patient is assigned to one student to provide most of the dental needs [9]. Following completion of several internal patient surveys many years ago, the comprehensive care model was introduced in part in an attempt to increase patient satisfaction. It has been noted that with improved patient satisfaction, increased compliance and improved clinical outcomes occur [10]. Dental schools have the challenge of meeting both patient and student's needs, delivering patients quality care and ensuring students have an opportunity to have the necessary learning experiences and are adequately trained in clinical and professional skills. Patients are retained and new patients are attracted when current patients are pleased with the dental care service they receive [11,12].

Different factors may play a role in patient satisfaction: the

interactions and communication with the dental provider and staff, the patient's expectations of treatment outcome, the timeliness of treatment and the fees. The objective of this study was to identify areas where patient's expectations were satisfied and, also to identify areas that could be improved. The areas covered in the survey related to interactions, communications, timeliness, administration and transportation, and fees among the Dental Faculty Practice (DFP) and 3<sup>rd</sup> and 4<sup>th</sup> year DDS student clinics.

## Methods

This study was given exempt status (IRB study number: 16-1193) by the Biomedical Institutional Review Board. A one page, 31-item, paper survey was developed using Tele form (Open Text Corp.) based upon survey instruments used in the past at the School of Dentistry and previously published surveys. The survey was pretested on ten adult patients and their comments were taken into consideration in the construction of the final survey instrument. The site of completion of a survey was noted by a "3" (3<sup>rd</sup> year DDS), a "4" (4<sup>th</sup> year DDS) or a "D" (Dental Faculty Practice) printed on the corner of the survey instrument. Reception desk personnel in the DFP and student clinics for the 3<sup>rd</sup> and 4<sup>th</sup> year dental students distributed a cover letter to adult patients (18 years of age or older) in the waiting area. The cover letter asked patients to complete the survey based on their experience with the dental care they had received at the School of Dentistry. Patients who volunteered to participate were given the survey instrument to complete and place it into a collection box. Patient participation was completely voluntary and collected anonymously. The completed surveys were collected weekly from each patient care area, placed in an envelope, and submitted for entry via scanning and analysis. DFP patient participation was evaluated without regard to provider specialty.

This retrospective survey was completed over a 90-day period (October-December 2016). The length of time was selected to insure an adequate number of patients would be seen. Assuming 60 respondents per group, a power analysis indicated the study would have approximately 80% power at a

0.05 level to detect a small effect size (<0.1) difference among the groups.

The survey consisted of 3 demographic questions (sex, age, and ethnicity) and 28 five-point Likert scale items: 8 related to interactions with the dental provider and staff, 8 to communications with the dental provider and staff, 5 to timeliness of treatment, 3 to fees and billing and 4 to administration and transportation (Tables 1-5). The surveys administered differed only by the phrases “student clinics” and “DFP” corresponding to the particular clinic.

Each item was rated from “strongly agree” (5), “agree” (4), “neutral” (3), “disagree” (2), “strongly disagree” (1) or “N/A” (0).

Because of the very low proportion of respondents who responded with “disagree” or “strongly disagree”, the responses were combined as “strongly agree/agree” or “neutral” or “disagree/strongly disagree” for analysis purposes. Differences in proportionality of responses among the three clinic locations (DFP, 3<sup>rd</sup> year pre-doctoral, and 4<sup>th</sup> year pre-doctoral) were assessed using Fisher’s Exact tests. Age was compared by a one way analysis of variance. Statistical analyses were carried out using SAS9.4. Level of significance was set at 0.05 for all analyses.

<b>Table 1. Interactions with dental provider and staff</b>					
		Agree/ Strongly agree	Neutral	Disagree/ Strongly Disagree	
		N (%)	N (%)		P-value
Comfortable while receiving treatment					.09
	DFP	96(100)	0 (0)	0 (0)	
	4 <sup>th</sup>	61 (95)	3 (5)	0 (0)	
	3 <sup>rd</sup>	120 (94)	5 (4)	2 (2)	
Pleased with the way treatment looks					.006
	DFP	97 (100)	0 (0)	0 (0)	
	4 <sup>th</sup>	59 (91)	4 (6)	2 (3)	
	3 <sup>rd</sup>	108 (95)	6 (5)	0 (0)	
Confidence in the dentist to provide quality care					.37
	DFP	94 (98)	2 (2)	0 (0)	
	4 <sup>th</sup>	60 (92)	3 (5)	2 (3)	
	3 <sup>rd</sup>	119 (96)	4 (3)	1 (1)	
Dental providers and staff members seem genuinely interested in my well being					.08
	DFP	95 (99)	1 (1)	0 (0)	
	4 <sup>th</sup>	59 (92)	3 (5)	2 (3)	
	3 <sup>rd</sup>	121 (97)	4 (3)	0 (0)	
Front desk staff treat me with courtesy and respect					.003
	DFP	91 (96)	3 (3)	1 (1)	
	4 <sup>th</sup>	58 (88)	8 (12)	0 (0)	
	3 <sup>rd</sup>	123 (98)	1 (1)	2 (2)	
Interactions with dental provider and staff member met my expectations					.004
	DFP	96 (99)	0 (0)	1 (1)	
	4 <sup>th</sup>	57 (88)	5 (8)	3 (5)	
	3 <sup>rd</sup>	123 (98)	2 (2)	1 (1)	
In an emergency, my concern is addressed and relieved by the dentist or another staff member					.053
	DFP	76 (96)	3 (4)	0 (0)	
	4 <sup>th</sup>	42 (84)	6 (12)	2 (4)	
	3 <sup>rd</sup>	87 (94)	6 (7)	0 (0)	
I would recommend the (student/DFP) clinic					.07
	DFP	94 (99)	0 (0)	1 (1)	
	4 <sup>th</sup>	57 (93)	2 (3)	2 (3)	
	3 <sup>rd</sup>	122 (98)	2 (2)	0 (0)	

$P \leq .05$  is statistically significant

<b>Table 2. Communication with dental provider and staff</b>				
	Agree/ Strongly agree	Neutral	Disagree/ Strongly Disagree	P-value
	N (%)	N (%)		
Questions have been answered to my satisfaction				.28
	DFP 93 (97)	2 (2)	1 (1)	
	4 <sup>th</sup> 58 (92)	3 (5)	2 (3)	
	3 <sup>rd</sup> 118 (97)	4 (3)	0 (0)	
Cost of care was clearly communicated prior to treatment				.18
	DFP 79 (85)	8 (9)	6 (6)	
	4 <sup>th</sup> 61 (94)	4 (6)	0 (0)	
	3 <sup>rd</sup> 110 (90)	6 (5)	7 (6)	
Types of treatment options were fully explained				.36
	DFP 92 (98)	1 (1)	1 (1)	
	4 <sup>th</sup> 60 (94)	4 (6)	0 (0)	
	3 <sup>rd</sup> 117 (94)	5 (4)	2 (2)	
I understood the treatment provided and the reasons for that treatment				.48
	DFP 91 (99)	1 (1)	0 (0)	
	4 <sup>th</sup> 60 (95)	3 (5)	0 (0)	
	3 <sup>rd</sup> 120 (97)	3 (2)	1 (1)	
I am able to reach my dentist by telephone				.07
	DFP 83 (91)	7 (8)	1 (1)	
	4 <sup>th</sup> 56 (95)	2 (3)	1 (2)	
	3 <sup>rd</sup> 120 (98)	2 (2)	0 (0)	
Phone messages to my dentist are promptly returned				.20
	DFP 68 (91)	6 (8)	1 (1)	
	4 <sup>th</sup> 52 (93)	3 (5)	1 (2)	
	3 <sup>rd</sup> 110 (97)	3 (3)	0 (0)	
I can discuss any concerns I have with my dentist				.15
	DFP 90 (98)	1 (1)	1 (1)	
	4 <sup>th</sup> 58 (94)	4 (6)	0 (0)	
	3 <sup>rd</sup> 120 (98)	3 (2)	0 (0)	
Automated telephone appointment reminder system is effective in reminding me of my appointment				.46
	DFP 84 (93)	5 (6)	1 (1)	
	4 <sup>th</sup> 52 (88)	3 (5)	4 (7)	
	3 <sup>rd</sup> 104 (91)	7 (6)	3 (3)	

$P \leq .05$  is statistically significant

<b>Table 3. Timeliness of treatment</b>				
	Agree/ Strongly agree	Neutral	Disagree/ Strongly Disagree	P-value
	N (%)	N (%)		
I am seen on time when I have appointments				.004
	DFP 87 (89)	11 (11)	0 (0)	
	4 <sup>th</sup> 50 (91)	3 (5)	3 (5)	
	3 <sup>rd</sup> 123 (97)	4 (3)	0 (0)	
I can be seen for recall appointments at the recommended intervals				.02
	DFP 90 (96)	4 (4)	0 (0)	
	4 <sup>th</sup> 50 (88)	3 (5)	4 (7)	
	3 <sup>rd</sup> 102 (89)	11 (10)	1 (1)	
I am contacted routinely when it is time for a cleaning or recall checkup				.002
	DFP 87 (95)	3 (3)	2 (2)	
	4 <sup>th</sup> 40 (71)	9 (16)	7 (13)	
	3 <sup>rd</sup> 97 (84)	7 (6)	12 (10)	
Treatment is completed as rapidly as I believe it should be				.003
	DFP 90 (97)	3 (3)	0 (0)	
	4 <sup>th</sup> 52 (80)	6 (9)	7 (11)	
	3 <sup>rd</sup> 105 (85)	11 (9)	7 (6)	
Treatment involving more than one department was smoothly coordinated				.03
	DFP 75 (97)	2 (3)	0 (0)	
	4 <sup>th</sup> 49 (84)	8 (14)	1 (2)	

	3 <sup>rd</sup>	94 (87)	13 (12)	1 (1)	
I would recommend to others					.07
	DFP	94 (99)	0 (0)	1 (1)	
	4 <sup>th</sup>	57 (93)	2 (3)	2 (3)	
	3 <sup>rd</sup>	122(98)	2 (2)	0 (0)	

$P \leq .05$  is statistically significant

<b>Table 4 .Administrative and Transportation</b>					
		Agree/ Strongly agree	Neutral	Disagree/ Strongly Disagree	
		N (%)	N (%)		P-value
Infection control procedures are followed and adequate to protect me					.17
	DFP	87 (94)	6 (6)	0 (0)	
	4 <sup>th</sup>	51 (86)	7 (12)	1 (2)	
	3 <sup>rd</sup>	110 (95)	6 (5)	0 (0)	
My medical/dental information remains private and confidential					.07
	DFP	90 (96)	4 (4)	0 (0)	
	4 <sup>th</sup>	57 (90)	6 (10)	0 (0)	
	3 <sup>rd</sup>	117 (98)	2 (2)	1 (1)	
Signs directing me to the Dental School from the parking deck are adequate					.42
	DFP	64 (82)	10 (13)	4 (5)	
	4 <sup>th</sup>	53 (87)	5 (8)	3 (5)	
	3 <sup>rd</sup>	107 (90)	10 (8)	2 (2)	
Shuttle buses are prompt and reliable					.21
	DFP	29 (73)	9 (23)	2 (5)	
	4 <sup>th</sup>	20 (56)	9 (25)	7 (19)	
	3 <sup>rd</sup>	27 (57)	16 (34)	4 (9)	

$P \leq .05$  is statistically significant

<b>Table 5. Fees &amp; Billing</b>					
		Agree/ Strongly agree	Neutral	Disagree/ Strongly Disagree	
		N (%)	N (%)		P-value
Monthly billing statements are easy to read					.41
	DFP	63 (85)	8 (11)	3 (4)	
	4 <sup>th</sup>	33 (92)	3 (8)	0 (0)	
	3 <sup>rd</sup>	58 (85)	10 (15)	0 (0)	
Monthly billing statements are accurate					.40
	DFP	62 (87)	6 (8)	3 (4)	
	4 <sup>th</sup>	28 (85)	5 (15)	0 (0)	
	3 <sup>rd</sup>	54 (87)	8 (13)	0 (0)	
Fees at the (student/DFP) clinic are reasonable					.003
	DFP	71 (76)	16 (17)	6 (6)	
	4 <sup>th</sup>	54 (87)	6 (10)	2 (3)	
	3 <sup>rd</sup>	115 (94)	6 (5)	1 (1)	

$P \leq .05$  is statistically significant

## Results

Completed surveys were obtained from 292 patients: 99 from DFP, 66 from the 4<sup>th</sup> year clinic and 127 from the 3<sup>rd</sup> year clinic. The average age of respondents was significantly different in the three clinic areas ( $P=0.04$ ). The respondents in the 4<sup>th</sup> year clinic were older, on average, (mean = 61.4, sd=12.3) than those in the DFP (mean=56.1, sd=16.3)

or the 3<sup>rd</sup> year clinic (mean=55.3, sd=17.2). Significantly more females responded to the survey from DFP compared to the pre-doctoral clinics ( $p=.01$ ). There was no proportional difference in racial demographics ( $P=.17$ ) Table 6.

<b>Table 6. Demographic characteristics of the sample study</b>				
	DFP	4 <sup>th</sup>	3 <sup>rd</sup>	
	N (col. %)	N (col. %)	N (col. %)	P-value
<b>Gender/Age</b>				0.01
Male	31 (32)	28 (43)	65 (52)	
Female	66 (68)	37 (57)	60 (48)	
<b>Race/ethnicity</b>				.17
African American	8 (9)	5 (8)	17 (14)	
Caucasian	74 (80)	53 (84)	87 (71)	
Asian	5 (5)	1 (2)	3 (2)	
Hispanic	1 (1)	1 (2)	9 (7)	
Other	4 (4)	3 (5)	6 (5)	
	Mean (SD)	Mean (SD)	Mean (SD)	
Age	56.1 (16.3)	61.4 (12.3)	55.3 (17.2)	.04

$P \leq .05$  is statistically significant

There were no statistically significant differences among the three clinics with respect to items relating to communications with staff and the dental provider ( $P > .07$  or greater). For example, over 90% of respondents from all three clinic areas agreed that their questions had been answered to their satisfaction and that concerns could be discussed with their dental provider and that their information remained private and confidential Tables 1 and 4.

For questions related to “interactions with dental provider and staff” the percentage of respondents who positively responded to all items was quite high: ranging from 84% to 100%. However, items related to how pleased respondents were with the treatment looked (esthetics), friendliness of the front desk staff and interactions meeting their expectations were statistically significantly different among the three clinics ( $p = .006$ ,  $.002$ ,  $.004$  respectively). A slightly higher

percentage of respondents from the 4<sup>th</sup> year clinic were not positive with percentages for these three items ranging from 9-12% neutral or disagreed (Table 3) even though 91% of the 4<sup>th</sup> year clinic participants agreed that they were pleased with the way treatment looked, and 88% agreed that interactions with the dental provider and staff met their expectations. These percentages compared to 95% and 98%, respectively, in the 3<sup>rd</sup> year clinic. Although not statistically different, the trend for respondents from the 4<sup>th</sup> year clinic to be less positive was observed for other items in the communications, interactions, administrative and transportation domains Tables 1,2,3,4.

For all items related to timeliness of care, the three clinic areas were statistically significantly different ( $p < .03$  or less), with DFP respondents responding more favorably ( $> 95\%$ ) to all items except “I am seen on time for appointments” (89%). Overall, timeliness of treatment tended to be more negatively viewed by respondents in the 3<sup>rd</sup> and 4<sup>th</sup> year clinics, however 80% or more responded positively to all items except only 71% of 4<sup>th</sup> year clinic respondents agreed that they were contacted routinely for checkups. However, 99% of DFP respondents, 98% of 3<sup>rd</sup> year and 93% of fourth year clinic respondents would recommend the DFP/student clinic to others Table 3.

The only item relating to fees and billing that was statistically significant was in response to the fees being reasonable. DFP respondents were less likely to have a favorable view of the fee structure ( $p = .003$ ), but there were no other significant differences between the three clinics Table 5.

## Discussion

Patient centered health care is becoming the norm and patient satisfaction is deemed an important component in obtaining treatment cooperation and improved clinical outcomes [13]. Dental school clinics, being both a health care and a teaching facility, must seek to balance the two missions [14]. However, there are only a few previously published studies addressing patient satisfaction relative to care provided in a United States dental school and these are rather dated [14,15].

Our study reflects more current patient satisfaction expectations. Patients in all three clinics who participated in this survey were

generally satisfied with their treatment as indicated by the high percentage of respondents in all clinics who would recommend the clinic in which they were treated. DFP patient respondents tended to be more satisfied with all aspects of service they received particularly when timeliness of care was an issue. This may be due to the increased experience and clinical speed providers in the DFP have compared to dental students. In the DFP, 100% of patients surveyed were comfortable while receiving treatment and were pleased with the way treatment looked. The lower percentages among the 4<sup>th</sup> year patients as compared to the 3<sup>rd</sup> year patients for satisfaction with the appearance of treatment and being pleased with the interactions with their dental provider and staff could possibly be attributed to patients having higher expectations for 4<sup>th</sup> year students, or the 4<sup>th</sup> year students may have been less verbally engaging with their patients due to pressures to complete treatment and graduation time constraints.

Patients from all three clinics considered transportation from the parking deck that serves the dental school an issue. Only 56% of participants in the 4<sup>th</sup> year clinics, 57% of participants in the 3<sup>rd</sup> year clinics and 76% of participants in the DFP agreed that shuttle busses were prompt and reliable. It is obvious from this survey that parking and transportation convenience is an issue which needs to be addressed Table 4.

The two student clinics use the same fee schedule which is considerably less expensive than the DFP schedule. This would probably explain the difference in satisfaction levels regarding fees being reasonable. Seventy-six percent of the DFP participants agreed the fee schedule was reasonable as compared to 87% in the 4<sup>th</sup> year clinic and 94% of participants in the 3<sup>rd</sup> year clinic Table 5.

## Conclusion

Dental student clinics and dental faculty practices compete for patients with other dental care sources including public health clinics and private dental practices [16]. Addressing patient expectations and satisfaction, including acceptable fees, are important considerations for success. Overall, patients in all three clinical groups in this study were satisfied with their treatment and would recommend others to receive

dental care in both student clinics and the DFP. There was a general progressive improvement in patient satisfaction from the student clinics to the DFP. The survey identified numerous areas related to patient satisfaction with staff, dental provider and treatment outcomes that suggest that patients treated in the 3<sup>rd</sup> year clinic were more pleased than those who were treated in the 4<sup>th</sup> year clinic. Beyond inherent personality differences, these findings cannot be explained.

The findings in this study were not dissimilar to a previously published one [14]. However, our survey identified opportunities for patient satisfaction improvement in all clinic areas of the School of Dentistry, especially in timeliness of care and transportation issues.

## Limitations

This study consisted of a rather small sample and reports the findings from only one dental school. The patients who responded to the survey were volunteers and responses were anonymous thereby limiting our assessment of the representativeness of the sample. However, we and other dental schools could use a similar approach if done periodically to assess trends in patient satisfaction in dental school clinics.

## Acknowledgments

This study was supported by Dora Lee and John C. Brauer Dental Research Fund.

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