A Cross-sectional Study of Patients' Satisfaction with Dental Care Facilities: A Survey of Adult Treatment at the University of the West Indies, School of Dentistry

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ABSTRACT

Objectives: *To determine the level of satisfaction with adult dental care at The University of the West Indies (UWI), School of Dentistry, using the Dental Satisfaction Questionnaire (DSQ) developed by Davies and Ware (1982) and to inferentially explore the factors associated with various patients' demographics.*

Methods: *A cross-sectional study was performed among adult dental patients attending UWI adult dental clinics. Data were collected using a self-administered, structured questionnaire which consisted of 19 questions on three subscales of pain management, quality and access (total).*

Results: *Sixty-nine per cent were female, 40% were between 45 and 64 years old and 31.3% had excellent self-rated dental health status. A Dental Satisfaction Index (DSI overall) of 76.42% satisfaction was found, with the highest satisfaction subscale for quality (81.17%), while access (72%) was the lowest occurring subscale. The mean DSI was 3.57 for the UWI emergency dental clinic and 3.87 for the polyclinic. The difference between the DSI overall in the emergency clinic compared to the polyclinic was statistically significant (*$p < 0.05$*)*

Conclusions: *There was a high level of overall satisfaction with dental care at the UWI dental school. Self-rated oral health status may be important in patients' satisfaction. Policies and strategies promoting preventive dental advice are likely to improve patients' satisfaction with dental care and may lead to increased satisfaction with dental services.*

Keywords: Adult, dental satisfaction, West Indies

Estudio Transversal de la Satisfacción de los Pacientes con los Centros de Atención Dental: Un Estudio del Tratamiento de los Adultos, Realizado por la Facultad de Odontología de la Universidad de West Indies

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RESUMEN

Objetivos: *Determinar el nivel de satisfacción en relación con la atención dental a adultos en la Escuela de Odontología de la Universidad de West Indies (UWI), utilizando el cuestionario de satisfacción Dental (DSQ) desarrollado por Davies y Ware (1982), así como explorar de manera inferencial los factores asociados con la demografía de varios pacientes.*

Métodos: *Se realizó un estudio transversal entre pacientes dentales adultos que asisten a clínicas dentales de UWI para adultos UWI. Se recogieron datos mediante un cuestionario estructurado*

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autoadministrado, que consistía de 19 preguntas sobre tres subescalas de manejo del dolor, calidad y acceso (total).

Resultados: *Sesenta y nueve por ciento eran mujeres, 40% tenían entre 45 y 64 años de edad, y 31.3% tenían un estado excelente de salud dental autoevaluada. Se halló un Índice de Satisfacción Dental (DSI general) de 76.42%, con la subescala de satisfacción más alta para la calidad (81.17%), mientras que el acceso (72%) fue la subescala más baja. El DSI promedio fue de 3.57 para la clínica dental de emergencia de UWI, y 3.87 para el Policlínico. La diferencia entre el DSI general en la Clínica de Emergencia comparada con el Policlínico, fue estadísticamente significativa (*$p < 0.05$*).*

Conclusiones: *Hubo un alto nivel de satisfacción general con el cuidado dental en la Escuela de Odontología de UWI. La autoevaluación del estado de salud oral puede ser importante para la satisfacción de los pacientes. Las políticas y estrategias que promueven los consejos dentales preventivos, mejoraran probablemente la satisfacción de los pacientes con respecto al cuidado dental, y pueden conducir al aumento de la satisfacción con los servicios dentales.*

Palabras claves: Adultos, satisfacción dental, West Indies

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INTRODUCTION

Patient satisfaction with healthcare describes the degree to which patients' needs "meet their expectations and provide an acceptable standard of service" (1). It is also a measure of the quality of care received by patients (2). Previous studies on patient satisfaction have described this as a multi-dimensional concept in that some aspects of care may be satisfactory to patients and unsatisfactory to others (3–5). Some of the factors which have been shown to affect patients' satisfaction with dental care include "technical competence, interpersonal factors, convenience, costs and facilities" (6).

Patient satisfaction has been linked to the outcome of care; satisfied patients are compliant with the advice of their dental practitioner, which leads to better effects of treatment (7, 8). The outcome of dental treatment impacts upon patients' attendance for dental treatment, where a poor outcome may delay future visits to the dental practitioner (9). Additionally, patient satisfaction surveys have been useful in assessing a patient-centred curriculum based upon the students' interactions with standardized patients (10). It has become a recognized measure of quality assurance (4) and knowledge of the patients' satisfaction will guide changes in the curriculum and potentially improve the competence of new graduates. This will allow for improvement of the quality of care that is delivered to patients in the wider society.

In Trinidad and Tobago (T&T), there is limited data on both patient satisfaction studies, as well as on the dental health status of the general population. Moreover, the adult dental health status is unknown, due to an absence of data in this population (11). Oral diseases such as dental caries have been described as a "major health problem" which cause morbidity; additionally, late presentation to the dentist may worsen the prognosis of the survival rate of oral cancer (12). Patient satisfaction can affect the utilization of healthcare where, globally, dental access is challenging (13). Most developing countries lack services which are "available or accessible for the general population" (14). This issue of accessibility has also been described locally in T&T, in the first national oral health policy, where the ratio of public sector dentist:population over 12 years of age stood at 1:52 773 in 2010 (11). This is valuable information which can be used to improve satisfaction and may also be a guide to improve the delivery of the dental curriculum at The University of the West Indies (UWI), School of Dentistry. Given that satisfaction influences patients' attendance for dental care, improved satisfaction should lead to increased utilization of dental services which may lead to reduced morbidity from dental diseases (13).

Patients' satisfaction with dental care has been shown to be affected by various factors and different measures have been used to assess patient satisfaction. The two main measures of dental satisfaction include:

1. The Dental Satisfaction Questionnaire (DSQ) of Davies and Ware (1982) – this questionnaire contains dimensions of the dentist's technical competence, interpersonal aspects of care, pain and fear as a result of treatment, as well as overall satisfaction with dental care
2. The Dental Visit Satisfaction Survey [DVSS] (Corah *et al*, 1984) – this questionnaire assesses dimensions of "cognitive, affective, behavioural satisfaction and overall satisfaction" with respect to a "specific dental encounter" (15)

Additionally, other studies used their own measure of dental patients' satisfaction with care; however; unlike the DSQ, these instruments were neither valid nor reliable in countries other than the one in which they originated. After reviewing the various measures of patient satisfaction with dental care, the measure found to assess dentists generally in terms of overall satisfaction, pain management, quality and access is the DSQ of Davies and Ware. The DSQ has been useful in other countries apart from the one in which it was

developed, where its use is widespread based on its validity and reliability (16). Furthermore, in a similar setting in a study by Priya *et al*, the DSQ had a high Cronbach's alpha which further attests to its reliability (17).

The aim of this study was to determine the level of satisfaction with adult dental care at The University of the West Indies, School of Dentistry, using the DSQ developed by Davies and Ware and to explore the factors associated with satisfaction levels based on age, gender, ethnicity, occupation and education, dental attendance and self-rated dental health status.

SUBJECTS AND METHOD

This study collected primary data obtained from a self-administered DSQ from the landmark study by Davies and Ware. The Davies and Ware framework is based on three subscales that assess pain management, quality and access, and the overall dental satisfaction. Data were collected on patients' demographics, dental attendance, self-rated dental health status *etc, via* the participant information sheet. The DSQ was self-administered and was slightly modified to increase suitability in this population. Here, the DSQ asked questions in relation to the dentists such as whether 'Dentists' offices are very modern and up to date'. However, the word 'dentists' was replaced by 'UWI dental students and interns' to make the questionnaire focussed on the UWI dental school, prior to its piloting in this setting (5).

One hundred consecutive patients in the waiting room of the UWI emergency and oral diagnosis dental clinic and the polyclinic were invited to participate in the study by the receptionists who gave the patients the consent sheets during the period in which data collection occurred (three weeks). All adult patients of the adult polyclinic and the emergency and oral diagnosis clinic who had dental treatment at the UWI dental school at least once within the past 12 months (that is, the patients had to have attended for treatment within 12 months of their current appointment in March/and or April 2012, when data were collected) were included. Patients under 18 years of age, illiterate patients and first-time attenders were excluded.

The three subscales and the Dental Satisfaction Index (DSI, overall) were calculated. Items of the DSQ questions, namely 2, 6, 7, 9, 10, 12, 14, 15, 16, 18 and 19 were scored in a negative manner; the scoring rules of the questionnaire necessitated a reversal of the scoring so that a high DSQ score represented high satisfaction (5). The scores of the subscales were obtained from the algebraic sum of each subscale in the following manner:

- pain management (the sum of questions 4, 8, 19)
- quality (the sum of questions 2, 6, 11, 14, 16, 17, 18)
- total access (the sum of questions 3, 5, 7, 9, 10, 13, 15)
- the overall levels of satisfaction with dental care (DSI (overall), the sum of questions 1–19)

Missing data were addressed by using the mean values to impute single items, similar to Skaret *et al* (16), where any question in which there were data missing for more than 20% of the items would have been excluded, but this was not the case in any of the items. The analysis was then run using this set of imputed data to calculate the means, standard deviation, scaled and prorated means for the DSQ for this sample, while another analysis was conducted on a sample in which the missing data were deleted. The results were then compared and were very similar; the imputed dataset was used to conduct all analyses in this study. The scaled means were calculated which enabled all subscales to be on a similar score of 1 (strongly agree) to 5 (strongly disagree), so that extreme dissatisfaction scores were 1 or near to it, scores of 3 represented neutrality and scores near to and including 5 demonstrated extreme satisfaction. Also, the prorated means of each subscale were calculated to facilitate comparison with similar studies. Descriptive statistics and inferential statistics by way of one-way analysis of variance (ANOVA) and the *t*-test were used to describe and inferentially explore the factors associated with satisfaction levels based on various factors such as occupation, age, gender, dental attendance and self-rated dental health status to one of the two UWI adult dental clinics. Inferential statistics by way of one-way ANOVA were used to satisfy the objective to inferentially explore the factors associated with satisfaction levels based on various occupational groups, age groups, gender and attendance to either the UWI emergency dental clinic or the polyclinic. The *t*-test also inferentially explored if there was a statistical difference between the mean DSI (overall) in the polyclinic patients compared to the emergency patients. These results were used to infer what the levels of satisfaction with dental care may be in the population of adult dental patients in T&T. The limitation, however, was that there was a large degree of uncertainty since the entire population of adult dental patients was not measured and these values are therefore uncertain, especially since many inferences were made by the researcher which leads to further uncertainty (18).

Ethical approval for the study was given by The University of the West Indies, St Augustine Research Ethics Committee, and written consent for the questionnaire was obtained from each patient. Data were analysed using SPSS version 19.0.

RESULTS

Most (69%) of the 100 participants were female and 40% were between 45 and 64 years old. Seventy-two per cent had secondary level education or lower and 31.3% had excellent self-rated dental health status; Indo-Caribbean (41%) and Afro-Caribbean (32%) comprised the main ethnic groups. Fifteen of the participants were from the emergency dental clinic and 85 from the polyclinic. The procedures which had been carried out on most of the patients during their previous visit to the UWI dental school was a cleaning (19.4%), fol-

lowed by having a filling (18.4%). The majority of patients had a dental attendance other than the categories presented (49.5%). The mean overall levels of dental care – DSI (overall) – was 3.57 for the UWI emergency clinic and 3.87 for the polyclinic (Figure). The highest mean in the polyclinic patients was found with the subscale quality (4.1), while the highest mean in the emergency group of patients was found in the pain subscale. The majority of patients were satisfied with the three subscales and had scaled means of 3.96 in the pain management subscale, 4.06 in the quality subscale, 3.6 in the access (total) subscale, and 3.82 in the DSI [overall] (Table 1). Table 2 shows the percentage of patients from each clinic who agreed with the respective DSQ statement.

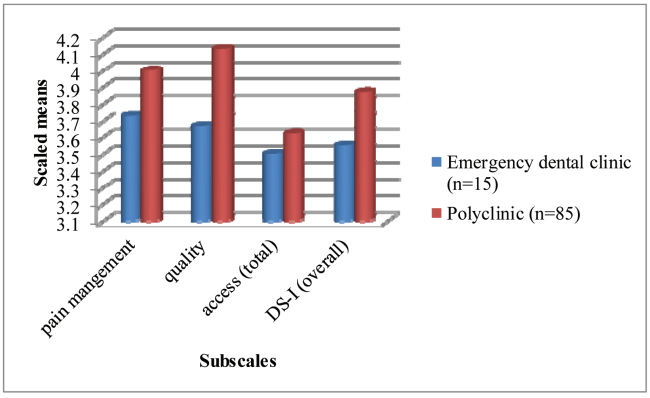

Figure: Scaled means in each subscale and the Dental Satisfaction Index (DSI, overall) in the emergency dental clinic and polyclinic of The University of the West Indies.

Table 1: Means, standard deviation, scaled and prorated means for the Dental Satisfaction Index (DSI) for the imputed sample showing the total satisfaction levels in the emergency clinic and polyclinic for each subscale

Scale	# of items	n	Mean	SD	Scaled mean	Prorated mean (%)
Pain management	3	100	11.87	2.43	3.96	79.13
Quality	7	100	28.41	3.71	4.06	81.17
Access (total)	7	100	25.20	3.34	3.60	72.0
DSI (overall)	19	100	72.60	8.22	3.82	76.42

Table 2: Percentage of patients in polyclinic and emergency clinic of The University of the West Indies (UWI) who agreed with each Dental Satisfaction Questionnaire (DSQ) statement

Dental Satisfaction Questionnaire	% of patients in agreement with the DSQ	
	Emergency	Polyclinic
1. There are things about the dental care that I receive at the UWI dental clinic that could be better	33.3	30.6
2. UWI dental students and interns are very careful to check everything when examining their patients	60.0	95.3
3. The fees at the UWI dental clinics are too high	0.0	8.3
4. Sometimes I avoid going to the UWI dental students and interns because it is so painful	20.0	8.2
5. People are usually kept waiting a long time when they are at the UWI dental clinic	20.0	18.8
6. UWI dental students and interns always treat their patients with respect	86.7	96.5
7. One of the reasons I come to the UWI dental clinic is because there are not enough dentists in my area	33.3	23.5
8. UWI dental students and interns should do more to reduce pain	20.0	10.6
9. UWI dental clinic is very conveniently located	73.3	88.2
10. UWI dental students and interns always avoid unnecessary patient expenses	33.3	51.8
11. UWI dental students and interns are not as thorough as they should be	6.7	15.3
12. I see the same UWI dental students and/or intern just about every time I go for dental care	40.0	16.5
13. It's hard to get an appointment at the UWI dental clinic for dental care right away	20.0	38.8
14. UWI dental students and interns are able to relieve or cure most dental problems that people have	53.3	84.7
15. Office hours at the UWI dental clinic are good for most people	86.7	92.9
16. UWI dental students and interns usually explain what they are going to do and how much it will cost before they begin treatment	73.3	92.9
17. UWI dental students and interns should do more to keep people from having problems with their teeth	33.3	23.5
18. The UWI dental clinic is very modern and up to date	60.0	75.3
19. I am not concerned about feeling pain when I go for care at the UWI dental clinic	80.0	70.6

Data from Table 3 were used to carry out the Levene's test for equality of variances followed by an independent *t*-test to compare the overall dental satisfaction between the emergency and polyclinic patients and to determine if there was a difference as a result of the type of dental clinic. Assumptions of the tests were met, the DSI (overall) scaled means were continuous, random and independent, and the populations from which the samples are derived were normally distributed, with the significance value of Shapiro-Wilk statistic being 0.24 and 0.39 for the emergency and the polyclinic patients, respectively. These were each greater than 0.05 for each data group, therefore, the DSI (overall) scaled means were normally distributed. Both clinics had similar standard deviations of 0.42 for the polyclinic and 0.39 for the emergency clinic (Table 3).

Table 3: Scaled means, standard deviations and standard error mean for emergency clinic and polyclinic

Clinic	Scaled mean DSI (overall)	SD	Std Error Mean
Emergency clinic (n = 15)	3.55	0.39	0.10
Polyclinic (n = 85)	3.87	0.42	0.05

DSI = Dental Satisfaction Index

When the means of the DSI (overall) were compared for both the polyclinic sample and the emergency dental clinic sample using the Levene's test for homogeneity, the variances were equal (Table 4).

Following this test, the *t*-test was conducted on these two samples t (98) = -2.774, $p = 0.007$), where the t value is -2.744 because the mean is smaller in the emergency dental clinic compared to the polyclinic. This difference in the overall mean satisfaction index is statistically significant between the emergency dental clinic and the polyclinic. However, only 7.1% of this variation could be explained by the clinic alone when the linear regression was performed (Table 5). Only self-rated dental health status was found to have a statistically significant association ($p < 0.0001$) with overall satisfaction with dental care (Table 6). The mean DSI (overall) difference between patients with excellent, very good, good, fair and poor self-rated dental health statuses is significant at the 0.05 level, when the post hoc tests were conducted on self-rated dental health status and DSI [overall] (Table 7).

Table 5: Model summary of the Pearson correlation coefficient between the clinic and the Dental Satisfaction Index

Model	R	R square	Adjusted R square	Std error of the estimate
1	0.267[a]	0.071	0.062	7.96089

a. Predictors: (constant), clinic

Table 4: Independent samples test of scaled mean DSI (overall) for The University of the West Indies emergency clinic and the polyclinic

	Levene's test for equality of variances		*t*-test for equality of means						
								95% confidence interval of the difference	
	F	Sig.	t	df	Sig (2-tailed)	Mean difference	Std error difference	Lower	Upper
Scaled mean DSI (overall)	0.216	0.643	-2.744	98	0.007	-0.32198	0.11734	-0.55484	-0.08912
Equal variances assumed			-2.923	20.382	0.008	-0.32198	0.11016	-0.55149	-0.09247
Equal variances not assumed									

DSI = Dental Satisfaction Index, Sig = significance

Table 6: Scaled mean DSI, standard deviation and ANOVA *p*-value, by sociodemographic dental attendance, procedure and self-rated dental health status

Characteristic		Number	Scaled mean DSI	SD	ANOVA *p*-value
Gender Males		31	3.75	0.47	0.288
Females		69	3.85	0.42	
Age (years) 18–24		12	3.71	0.40	0.546
25–44		36	3.89	0.47	
45–64		40	3.81	0.43	
65–74		10	3.82	0.28	
75–84		2	3.47	0.60	
> 85		0	0	0	
Marital status: (n = 100)	Single	30	3.89	0.45	0.681
	Married/Living with partner	47	3.83	0.44	
	Divorced	8	3.76	0.31	
	Widowed	10	3.74	0.37	
	Separated	5	3.61	0.57	
Children Yes		76	3.80	0.42	0.453
No		23	3.90	0.48	
Education (n = 100)	None	2	3.61	0.39	0.456
	Primary	23	3.72	0.09	
	Secondary	47	3.84	0.06	
	University/College	26	3.89	0.09	
Ethnicity (n = 100)	Afro-Caribbean	32	3.87	0.07	0.725
	Indo-Caribbean	41	3.78	0.07	
	Caucasian	1	4.32	0	
	Chinese	0	0	0	
	Mixed	24	3.80	0.09	
	Other	2	3.79	0.53	
Occupation (n = 100)	Professional/Managerial	25	3.81	0.42	
	Non-manual	6	3.82	0.44	
	Skilled manual	25	3.85	0.51	
	Unskilled manual	2	3.76	0.41	
	Housewife	20	3.69	0.38	
	Retired	14	3.34	0.43	
	Unemployed	8	3.90	0.41	
Regular dentist (n = 99)	Yes	28	3.86	0.41	0.513
	No	71	3.80	0.44	
Attendance (n = 99)	Only when in pain	31	3.75	0.46	0.272
	Once a year	14	3.90	0.49	
	Every 6 months	5	3.58	0.44	
	Other	49	3.89	0.39	
Procedure (n = 98)	First visit	11	3.80	0.47	0.802
	Cleaning	19	3.75	0.42	
	Filling	18	3.88	0.47	
	Root canal	16	3.76	0.33	
	Crown/Bridge	4	4.13	0.22	
	Dentures/Plate	10	3.92	0.54	
	Extraction/Surgery	13	3.76	0.47	
	Review	7	3.81	0.52	
Self-rated dental health status (n = 99) Excellent		31	4.11	0.39	**0.000**
Very good		13	3.60	0.35	
Good		27	3.81	0.39	
Fair		20	3.64	0.38	
Poor		8	3.55	0.46	

DSI = Dental Satisfaction Index, ANOVA = analysis of variance

Table 7: Post hoc tests on Dental Satisfaction Index (overall) and self-rated dental health status

Multiple comparisons

Dependent variable: scaled mean Dental Satisfaction Index (overall)

	(I) Dental status	(J) Dental status	Mean Difference (I-J)	Std error	Sig	95% confidence interval Lower bound	95% confidence interval Upper bound
Games-Howell	Excellent	Very good	0.51691*	0.11830	0.002	0.1695	0.8643
		Good	0.30309*	0.10137	0.033	0.0172	0.5890
		Fair	0.46995*	0.11031	0.001	0.1552	0.7847
		Poor	0.55942	0.17607	0.061	-0.0234	1.1422
	Very good	Excellent	-0.51691*	0.11830	0.002	-0.8643	-0.1695
		Good	-0.21383	0.12127	0.415	-0.5687	0.1410
		Fair	-0.04696	0.12883	0.996	-0.4226	0.3287
		Poor	0.04251	0.18822	0.999	-0.5580	0.6431
	Good	Excellent	-0.30309*	0.10137	0.033	-0.5890	-0.0172
		Very good	0.21383	0.12127	0.415	-0.1410	0.5687
		Fair	0.16686	0.11349	0.587	-0.1569	0.4906
		Poor	0.25634	0.17808	0.619	-0.3284	0.8410
	Fair	Excellent	-0.46995*	0.11031	0.001	-0.7847	-0.1552
		Very good	0.04696	0.12883	0.996	-0.3287	0.4226
		Good	-0.16686	0.11349	0.587	-0.4906	0.1569
		Poor	0.08947	0.18331	0.987	-0.5018	0.6807
	Poor	Excellent	-0.55942	0.17607	0.061	-1.1422	0.0234
		Very good	-0.04251	0.18822	0.999	-0.6431	0.5580
		Good	-0.25634	0.17808	0.619	-0.8410	0.3284
		Fair	-0.08947	0.18331	0.987	-0.6807	0.5018

*The mean difference is significant at the 0.05 level

DISCUSSION

The results of this study were comparable to recent ones on the levels of satisfaction; the overall prorated mean satisfaction levels of the adult patients in this study were high (76.42%), as were each of the three subscales of access [total] (72%), pain management (79.13%) and quality (81.17%). This was similar to satisfaction levels in other studies (3, 19), which showed an analogous distribution in the three subscales and overall satisfaction; however, our results were higher in each subscale and the overall dental satisfaction index.

The relationship between the overall satisfaction levels and sociodemographic factors, dental attendance, procedure and self-rated dental health status were explored. Unexpectedly, however, no statistically significant relationship between satisfaction and the following variables of age, gender, ethnicity, dental attendance, occupation or education was found in this population. The results showed only self-rated dental health status to be statistically significant, where satisfaction was higher with better self-rated dental health status. This finding is similar to that of Stewart and Spencer (1) and Golletz, *et al* (3) in which patient satisfaction was shown to be related to self-reported dental health status; self-reported poor oral health and dissatisfaction were related (1, 3).

The inferential comparison between the emergency dental clinic and the polyclinic showed an increased satisfaction with the latter, which was statistically significant; however, this variation in satisfaction was not strongly correlated to the dental clinic. This difference may have been due to the large difference in sample sizes, since there were 85 patients from the polyclinic *versus* 15 patients from the emergency dental clinic. Moreover, patients had to have at least one previous visit to the UWI dental school within the past year, which may have excluded patients who were satisfied with the dental services provided in just one visit to the emergency dental clinic.

Self-rated dental health status was the only variable shown to be related to dental patients' satisfaction in this population. The attitude and behaviour of dentists have been suggested as contributory factors for this association (3). Dentists may unknowingly behave more encouragingly with patients who have better oral health and those who present routinely than those with poorer status and therefore only present when dental emergencies arise (5). This underscores the need to deliver preventive advice to all patients attending dental services, regardless of their dental health status, since periodontal disease and dental caries are the most prevalent of the oral diseases, and dental caries have been referred to as the "last great epidemic" (20).

Cost can be a barrier to dental care in light of the fact that dental disease has been classified as the "fourth most expensive disease to treat in most industrialised countries" (21). In T&T, dental services are offered privately at a cost or freely at the nearest health centre as part of the primary healthcare system. Most health centres are not fully

equipped to offer the full services of the private sector. As a result of private practice treatment being difficult to access by the most disadvantaged groups, this has resulted in inequalities in oral health (22). The dental services provided by the adult clinics in the UWI dental school may be able to aid in reducing these inequalities, in that immediate access to the emergency dental services are based on availability of students and equipment and not area of residence as is the case with health centres. These factors affect access which, although had a mean satisfaction level of 72%, was the lowest of the three subscales compared to pain management and quality of care. This research showed that cost of treatment was the most satisfactory aspect of the DSQ, as none of the emergency clinic patients and few of the polyclinic patients agreed with the statement that the fees were too high. This may have been due to the largely subsidised fee structure for all procedures performed at the UWI dental school.

In this study, the majority (72%) of patients attending for dental care had up to secondary school education or lower, which may be used as a proxy for socio-economic status, given that the fees are much lower at the dental school than private practice. It has been shown that patients from lower socio-economic status have been less satisfied with the dental care they received (23).

Dental schools need to evaluate their programme effectiveness and patient surveys are one way of doing so, along with student, employer and alumni surveys, competency and board examinations (10, 21). The students need to demonstrate that the dental care provided to their patients is not only of an acceptable standard to their supervising instructors, but also that the patients themselves are satisfied with the level of care received. This study shows that the level of satisfaction at the UWI dental school is high overall (76.4%) and particularly with quality of dental care (81.2%). This is comparable to other studies (5, 17) and may be explained by patient perception that care in a dental school setting where treatment is closely supervised and checked may be better. Also, patients attending the UWI dental school pay much lower fees compared to private practice and may have lower expectations (17).

This study was limited in that the assessment tool (the DSQ by Davies and Ware) used normative criteria to assess patients' satisfaction with respect to certain aspects of dental care, namely: cost, access (total), quality and overall satisfaction (5). The DSQ also did not explain why these values resulted. However, if satisfaction is assumed to be subjective in nature (2), then this questionnaire may not have been able to elicit all aspects of dental care that patients may deem pertinent to their levels of satisfaction with dental care. Furthermore, the DSQ has been shown to be limited in its assessment of dental patients' satisfaction (6). This limitation of the DSQ may have impacted upon the results in that only self-rated oral health status was shown to be related to dental patients' satisfaction; these unmeasured factors may have been related to the determined levels of satisfaction in this research. Alternatively, a qualitative study may have been used to ascertain the emotional, perceptive and social factors of dental patients' satisfaction with dental care which were not assessed by the DSQ (6). Additionally, the cross-sectional study was used to collect data on the prevalence of satisfaction at the point in time in which data were collected; as such, it was not able to determine the cause of the satisfaction levels but rather assessed the various variables associated with satisfaction levels.

The employment of self-administered questionnaires eliminated the possibility of interviewer bias (24). A limitation of this cross-sectional study was that it might have been subjected to "recall bias" (24), given that research has shown that people tend to remember "dental issues and problems" (25). However, the recall time frame was limited to treatment received at the UWI dental school over the past twelve months.

Another limitation of this study was that the views of current patients were assessed rather than that of former patients which might have led to different results. Butters and Willis showed that an "inflated response" may have arisen as a result of patients who are dissatisfied no longer utilizing the dental services of the UWI dental school (4). Conversely, the exclusion criteria of the methodology of this study omitted the views of patients who might have been satisfied or even dissatisfied with just one visit for emergency treatment which could have affected their subsequent attendance for dental treatment in this setting.

Furthermore, this study was conducted on a sample size of 100 patients, 85 of whom attended the polyclinic, while only 15 were from the emergency clinic; therefore inferences may need to be carefully made when comparing the level of satisfaction between these two clinics. Care should also be taken when generalizing the findings of this cross-sectional study to the general population since the subjects of this study belonged to a subgroup, that is, patients attending a university-based dental clinic. However, since the results of satisfaction are similar to other studies (1, 5, 21) and the data provide a useful insight into the issue of adult dental patients' satisfaction with dental care, it is logical to presume that satisfaction levels will be similar in other settings.

Future studies based on qualitative findings may also help determine why patients had these levels of satisfaction based on this primary analysis of this normative assessment. Additionally, routine audits after implementation of recommendations will be useful in determining their success in affecting patients' satisfaction with dental care, the findings of which can be used to ensure the improved quality of dental care and modify the dental curriculum.

CONCLUSION

This research determined that the overall levels of satisfaction with dental care at the UWI dental school were

high, especially so for the subscale that determined quality. Analysis of these findings suggest that self-rated oral health status may be an important factor associated with dental patients' level of satisfaction with dental care, while no significant correlation between other factors were found. The DSQ (Davies and Ware) worked well to determine primary data on the levels of satisfaction of adult patients with dental care in this setting, whilst adding to the existing knowledge. The implications of these findings may be useful in similar situations.

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