Service quality factors and outcomes in dental care

Alan Baldwin and Amrik Sohal

Introduction

When considering the availability of prior studies into this topic, Bush and Nitse (1992, p. 39) identify that “very little empirical information is available about consumers’ acceptance of retail dental practices”, while Laslett (1994, p. 21) confirms that “Despite the consensus that patient satisfaction surveys are important for quality assurance in medical services and hospitals, little work has been focussed on patient satisfaction with dental services”. Bryce (1999, p. 41), when discussing the availability of customer satisfaction indicators pertaining to in-hospital medical treatment, comments “the sort of data currently being sought by some funders (e.g. health insurance funds and governments) is not yet available anywhere in the world”.

Berman-Brown and Bell (1998) confirm that much research into customer-oriented service quality perceptions exists in areas other than health care, producing a yet-to-be-met need in the health quality arena. The published literature contains many references to quality and customer service concepts pertaining to the dental and medical professions from a clinical perspective. It has been proposed that a significant variation exists between a patient’s expectations of treatment quality and the perceived service quality of the treatment received, due to a number of factors related to the service quality of the treatment delivered (Strasser et al., 1995; Butler et al., 1996; Berry et al., 1988).

This paper examines the strength of the relationship between service quality practices and service quality outcomes in dental care.

The research question developed for this study was: “Which aspects of the delivery of dental care impact most significantly on patients’ perceptions of the service quality of the care received?”. The research methodology used a questionnaire based upon the SERVQUAL instrument. A number of implications are identified that impact significantly upon the service quality perceptions of dental patients. Amongst these are patient fear and anxiety, patients’ appreciation of punctual and convenient service delivery, and the positive advantages of involving patients in the development of treatment plans. Dental practitioners are encouraged to develop strategies within their practices that are designed to build upon the advantages identified within the study.

Keywords
Service quality, Dentists, Health care, Australia

Abstract
The research question developed for this study was: “Which aspects of the delivery of dental care impact most significantly on patients’ perceptions of the service quality of the care received?”. The research methodology used a questionnaire based upon the SERVQUAL instrument. A number of implications are identified that impact significantly upon the service quality perceptions of dental patients. Amongst these are patient fear and anxiety, patients’ appreciation of punctual and convenient service delivery, and the positive advantages of involving patients in the development of treatment plans. Dental practitioners are encouraged to develop strategies within their practices that are designed to build upon the advantages identified within the study.

Electronic access
The Emerald Research Register for this journal is available at http://www.emeraldinsight.com/researchregister
The current issue and full text archive of this journal is available at http://www.emeraldinsight.com/0960-4529.htm

Managing Service Quality
Volume 13 · Number 3 · 2003 · pp. 207-216
© MCB UP Limited · ISSN 0960-4529
DOI 10.1108/09604520310476472

#MCB UP Limited. ISSN 0960-4529 DOI 10.1108/09604520310476472

207
(3) **Reliability.** Practitioners who display traits that are consistent with the patient’s perception of “professionalism” have a significant positive effect on the patients’ perceived level of service quality.

(4) **Tangibles.** The physical characteristics of the practice (i.e. the décor, look, ambience, etc. of the offices, surgeries, rooms, and reception areas, including the technology and equipment used within them) have a significant positive effect on the patients’ perceived level of service quality.

The findings of this research provide valuable insights for dental practitioners into the non-clinical aspects of service quality delivery that are most valued by patients receiving treatments within their practices.

**Service quality**

A popular definition of quality proposed by Berry *et al.* (1988, p. 35) is “conformance to specifications”, however, they go on to claim that this definition can be improved for service quality: “conformance to customer specifications; it is the customer’s definition of quality, not management’s, that counts”.

**Customer satisfaction**

Evans and Lindsay (1999, p. 176) proffer the view that “Customer satisfaction results from providing goods and services that meet or exceed customers’ needs”. Linder-Pelz (1982) defined patient satisfaction as “Positive evaluations of distinct dimensions of the health care”. As customer satisfaction is customer/patient based, an accurate analysis of the patients’ perceptions of the service delivery (outcomes) is critical to the success of this research.

**The SERVQUAL expectation-perception gap**

The patient-centred audit as described by Berman-Brown and Bell (1998) is hailed as the first instrument that is “totally grounded in patients’ views”. The audit as described is indeed patient oriented, it appears to be (and is later recognised in the article to be) no more than an adaptation of Parasuraman *et al.*’s (1988, 1991) SERVQUAL framework. Utilising tangibility, reliability, responsiveness, assurance and empathy, the service quality dimensions that are contained in the SERVQUAL instrument, as the foundations for the survey, 22 questions were presented to patients that related to their perceptions of the service quality that they received. While the questions were finalised from data collected during qualitative focus-group interviews, the issues of prior expectations and the degree of importance placed on each dimension by the sample were not addressed, limiting the effectiveness of the survey.

With a study based on the SERVQUAL method, Camilleri and O’Callaghan (1998) paired patients’ expectations to their perceptions of the outcomes of service quality delivery in the Maltese public and private hospital systems. The three most significant service quality indicators were related to the hospital environment, personalised service and professional care. While the main focus of the study was to compare the public system against the private, the validity of the expectation/perception pairing methodology bodes well for future studies.

Andaleeb’s (1998) study proposes and tests a five-factor model that assesses the variation in customers’ satisfaction with hospitals. The study asserts that the most powerful indicators of customer satisfaction are the staffs’ competence, their demeanor and the patients’ perceived cost of hospitalisation.

Carman (1990) attempts to build on and replicate the research conducted by the authors of the SERVQUAL instrument by attempting to replicate their original studies in three separate situations: a tyre store, an employment placement centre and a dental clinic. The author confirms that the SERVQUAL instrument may be adapted for use in any industry. It appears, however, that adaptations should only be made within the stated guidelines, if the integrity of the instrument is to be maintained.

**Prior Australian research**

Laslett’s (1994) research into patient satisfaction at the Royal Dental Hospital Melbourne (RDHM) was based on the Davies and Ware (1981) instrument and assumed that there were a number of factors that contribute to patient satisfaction. Laslett measures this satisfaction and makes recommendations regarding improving the level of patient access to services. As Laslett’s study is conducted within the publicly funded RDHM, the issue of access differs to that explored within this research report, given that to be included in the sample frame, all the respondents must have visited a dentist in private practice over the previous 12 months.
Research methodology

The primary data gathering medium employed within this research was a written self report survey questionnaire. The questionnaire collected both quantitative and qualitative data and was adapted as recommended by Parasuraman et al. (1991, p. 41) in that only “minor customisation of the wording of items” was used from the SERVQUAL instrument originally developed and subsequently refined to improve the instrument’s reliability and validity by Parasuraman et al. (1991).

Only data that a dental practitioner could reasonably expect to gather from patients were sought within the demographics section of the survey. Questions relating to education and income levels were deliberately not sought as these would not typically be collected by a dental practitioner and would therefore reduce the perceived worth of the study to its intended audience (dental practitioners). Two sets of questions, one relating to the respondents’ perceptions, the other relating to their expectations of a particular aspect of service quality, comprised Section Two (see Appendix). Each question was formed on a Likert scale, ranging between 1 and 7, with 1 representing “strongly disagree” and 7 being “strongly agree”.

The relative importance of each of the five dimensions of service quality was assessed through a ranking process adapted from Parasuraman et al.’s (1991) questions related to this aspect, which appeared in the third section of the questionnaire (see Appendix).

The final section of the questionnaire invited respondents to share their views about the service quality they had received from their dental practitioners. Questions were open-ended and covered the respondents’ feelings relating to visiting their dental practitioner, the pleasing and displeasing aspects of visits, important indicators of service quality, aspects that indicate “professionalism”, together with suggestions about how practitioners might improve their level of service delivery, as perceived by their patients.

An explanatory statement, consent form and survey questionnaire, together with a reply paid envelope, were mailed to the sample frame of 1,485 people selected from a cohort of people who held private health insurance that provided cover for dental treatment with Australian Unity Health Limited. The responses numbered 357, representing a response rate of 24.2 percent. When considering the sample as a proportion of the population, Krejcie and Morgan (1970), recommend that for the population considered within this survey - 4,500 people - a sample of 354 persons is required if “the sample proportion will be within ±0.05 of the population proportion with a 95 per cent level of confidence” (Krejcie and Morgan, 1970, p. 608). The 357 responses received during the research have met this criterion.

Quantitative data analysis

The Statistical Package for Social Sciences (SPSS) for Windows version 10.0 software package was used to conduct most data analysis, while Microsoft Excel 2000 was used to produce the tables and graphs from data supplied by SPSS outputs. The first analyses considered the demographics of the sample, and where appropriate, compared the respondents’ profile to those that comprised the sample frame. Descriptive statistics, primarily frequencies, provided an understanding of the respondents’ gender, age, location, time elapsed since last visit, traveling distance and appointment time distributions. Data on the practitioners that they visited were also collected, including gender, age, type of practitioner and practice composition, enabling t-tests to be conducted to verify any links between the respondent’s demographic profile, the practitioner’s profile, and the service quality levels received (i.e. the gap between the respondents’ perceptions and their expectations).

Three batteries, of 22 questions each, relating to the aforementioned perceptions of service quality received, the respondents’ prior expectations of service quality, and the perceived gaps between expectation and delivery were analysed. These three sets of 22 results were factor analysed to ascertain their congruence with the service quality dimensions originally established by Parasuraman et al. (1991) during a number of studies using the SERVQUAL instrument.

Factor analysis is defined by Hair et al. (1998, p. 90), as “address(ing) the problem of analysing the structure of the interrelationships (correlations) among a large number of variables by defining a set of common underlying dimensions, known as factors”.
The standard deviations of the independent variables comprising the factors, together with the reliability and validity measures, were analysed to ensure that the multi-item scale items were consistent and to confirm the validities established by Parasuraman et al. (1991) when the SERVQUAL instrument was finalised. One sample t-tests were conducted to confirm the independent strength of the weighted gap factors’ components and that none of the individual factors had an overly dominant effect on the overall measure of service quality gleaned from the perception/expectation gap results.

**Factor analysis**

As recommended by Parasuraman et al. (1991), a factor analysis was performed on the data that interpreted the respondents’ levels of satisfaction with the 22 questions relating to their expectations ($F_e$) and the 22 questions pertaining to their perceptions, of the level of service received ($F_p$). A further factor analysis was then performed on the gap between these expectations and perceptions ($F_q$), as reported by each respondent.

**Standard deviations**

All analyses were first screened for abnormal standard deviations, with those variables producing outlier values indicating that the wording of the question may have confused the respondents. Of the “perceptions” battery the standard deviations fell in the range 0.87 to 1.35, while within the “expectations” battery the standard deviations ranged from 0.80 to 1.46. The “gap” analysis’ standard deviations ranged from 0.85 to 1.61 - this greater range does not, however, indicate that there was confusion regarding the wording of questions (as it would have done for the expectations and perceptions batteries).

**Correlations**

The correlation matrices were checked next to ensure that the correlation between individual variables was neither too high, nor too low, overall. The values appeared evenly distributed, indicating that there is neither an indication that their explanatory power is diminished by being too highly correlated, nor that there is little likelihood of there being a suitable range of dimensions of service quality within the spread of variables. The only troublesome correlation was that between the gap responses for question 3 (“my dentist’s employees are neat-appearing”) and question 7 (“my dentist performs the service right the first time”), which returned an abnormally low correlation of 0.111, with a significance of 0.023. While still acceptable at 95 percent significance, this low correlation value indicates that the two questions appeared to be substantially unrelated to most respondents.

**Total variance explained**

The percentage of the total variance within the data that is explained by each model ranged between 65.92 percent for the four factor “gap” version ($4F_q$) to 74.33 percent for the five factor “expectations” model ($5F_e$).

**Reliability coefficients - internal consistency**

Internal consistency within a survey instrument is assessed by measuring the reliability of the questionnaire’s items and scales through a process used to “measure the internal consistency of a measure [by analysing how well] scores on subsets of the items within a scale are correlated” (Zikmund, 1997, p. 341). Reliability coefficients were computed for the independent variables (IVs) that formed each group of factors, with Cronbach’s alpha (Cronbach, 1951) calculations producing the values shown in Table I, by factor, within each factor type.

<table>
<thead>
<tr>
<th>Table 1 Reliability coefficients with Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>$n$</td>
</tr>
<tr>
<td><strong>Expectation factors ($4F_e$)</strong></td>
</tr>
<tr>
<td>$F_e1$ – Skill and ability</td>
</tr>
<tr>
<td>$F_e2$ – Punctuality</td>
</tr>
<tr>
<td>$F_e3$ – Personal attention</td>
</tr>
<tr>
<td>$F_e4$ – Tangibles</td>
</tr>
<tr>
<td>Overall ($4F_e$) Cronbach’s alpha</td>
</tr>
<tr>
<td><strong>Perception factors ($4F_p$)</strong></td>
</tr>
<tr>
<td>$F_p1$ – Skill and ability</td>
</tr>
<tr>
<td>$F_p2$ – Punctuality</td>
</tr>
<tr>
<td>$F_p3$ – Personal attention</td>
</tr>
<tr>
<td>$F_p4$ – Tangibles</td>
</tr>
<tr>
<td>Overall ($4F_p$) Cronbach’s alpha</td>
</tr>
<tr>
<td><strong>Quality gap factors ($4F_q$)</strong></td>
</tr>
<tr>
<td>$F_q1$ – Responsiveness</td>
</tr>
<tr>
<td>$F_q2$ – Empathic assurance</td>
</tr>
<tr>
<td>$F_q3$ – Reliability</td>
</tr>
<tr>
<td>$F_q4$ – Tangibles</td>
</tr>
<tr>
<td>Overall ($4F_q$) Cronbach’s alpha</td>
</tr>
</tbody>
</table>
While alpha values will always fall between 0 and 1, the above values are all in excess of the "generally agreed on lower limit for Cronbach’s alpha of 0.70" recommended by Hair et al. (1998, p. 118). This result can be partially attributed to the number of IVs (questions) in the questionnaire, as Cronbach’s alpha has a “positive relationship to the number of items in the scale” (Hair et al., 1998, p. 118). As the self report questionnaire contained 22 items, it is to be expected that a high value would be achieved, however, the magnitude of the alpha values obtained does constitute positive proof of the internal consistency of the items forming the self-report questionnaire’s scale. Additionally, when the individual $F_1$, $F_2$, and $F_3$ factors’ alpha values are analysed they too indicate significant levels of reliability and internal consistency.

Nomological validity - perceptions and expectations

The SERVQUAL instrument’s two batteries of questions are designed to interrogate respondents’ experiences of levels of service quality on five dimensions: tangibles, reliability, responsiveness, assurance and empathy. The authors’ (Parasuraman et al., 1991) claim that the SERVQUAL instrument’s strength in the areas of scale reliability and validity is well proven, as assessed by a number of published studies, that include Babakus and Boller (1991), Bensinger and Lambert (1990); Carman (1990) and Finn and Lamb (1991). The results from this study further demonstrate the instrument’s strength in the areas of scale reliability and validity.

Construct validity - perceptions and expectations

The $4F_q$ model, in containing factors that differed from each other and that are distinctly identifiable, is said to have discriminant validity (Carman, 1990). Another aspect of validity is the ability of factors to accurately reflect the dimensions or constructs originally proposed by the hypotheses, referred to as construct validity (Hair et al., 1998, p. 584). The individual factors contributing to the $4F_q$ model are as follows:

1. **Factor one - skill and ability.** This factor can best be described as representing the “craft” skills that dental practitioners have studied and practiced. Safety, reliability, and technical ability are incorporated within this composite factor - understandable considering the intimate and intrusive nature of the service being provided.

2. **Factor two - punctuality.** Punctual, timely delivery of service with minimal waiting time and delays, and practitioners that are responsive to their patients’ needs form the essential elements of this factor.

3. **Factor three - personalised attention.** Chair-side ability, knowledge of the required procedures, personalised attention and the ability to anticipate the needs of patients, all feature strongly.

4. **Factor four - tangibles.** The equipment, décor, waiting room, physical appearance of employees’ uniforms, and the attractiveness or otherwise of promotional materials contribute to this factor’s success as a predictor of service quality.

Nomological validity - quality gaps

The four factor model, $4F_q$ (see Table II) adopts the five factors proposed by Parasuraman et al. (1991) in the modified SERVQUAL instrument, however, the factors labelled “assurance” and “empathy” by Parasuraman et al. (1991) have been merged by the SPSS factor analysis process to form one factor. Considering the very personal nature of the service being assessed within a dental care environment, it is not surprising that dimensions of service that represent assurance and empathy become closely aligned. All IVs have factor loadings of greater than 0.45, ensuring that there is sufficient evidence to group them within their allocated factor.

Construct validity - quality gaps

The factors emerging from the $4F_q$ “gap” analysis can be defined by noting the aspects of each factor that featured most frequently in the responses to the qualitative questions.

1. **Factor one - responsiveness $F_{q1}$.** A recognisable willingness to help promptly, to respond readily to the demands of patients, to instil confidence and advise patients of their rights and obligations in a timely manner, are all principal conditions of this factor.

2. **Factor two - empathic assurance $F_{q2}$.** Major features of this factor incorporate a feeling that the practitioner understands and recognises the needs of patients to be treated, at times that suit the patients and in an environment that encourages the patients to
feel less anxious. Patients are treated as individuals, with their specific needs, questions and interests met through the ability of employees to enhance the level of security felt by the patients.

Factor three - reliability $F_{3q}$.
Respondents to the qualitative questions indicated that a low failure or re-treatment rate, high levels of quality control, an enthusiastic yet caring nature and skill in performing the agreed procedures, all contribute to an overall impression that the practitioner is dependable and can be relied on.

Factor four - tangibles $F_{4q}$.
Principal indicators of this aspect include a belief that the practitioner’s practice instils confidence in the patients through its appearance, the appearance of the practitioners and their employees, and the quality and accuracy of any promotional or other material provided by the practitioner.

Limitations

Expectation/perception gaps
The measurement of “gaps” between the respondents’ expectations and perceptions of the quality of the service received that was conducted in Section two of the self-report questionnaire would ideally have been measured by assessing the respondents’ expectations prior to visiting their dentist. Their perceptions of the quality of the service that they had received would then be measured immediately following the visit. For the purposes of this research, however, given time and resource constraints, such an approach was impractical.

Moderating variables
The attempt to identify moderating variables such as age, gender and location as having an effect on patients’ levels of service satisfaction was not successful, there being no significant effects measurable from the data produced by the project.

Inter-rater reliability
The qualitative results from this project were not, in the traditional sense, checked for inter-rater reliability, principally due to time constraints. The qualitative results were coded after a gap of two weeks had elapsed since the quantitative results were input to SPSS, and before any analysis had been performed on the quantitative data. This approach enabled the author to deliver a reasonably objective coding methodology, through a process of adopting a deliberately impartial classification regime.

Relevant literature
The dearth of literature directly pertaining to the delivery of quality service in a private dental provider’s environment has limited the researcher’s ability to compare directly the strength, validity and reliability of this study to other preceding studies, although the studies by Carman (1990) and Laslett (1994), provide comparable results, albeit from two public dental hospitals. It has also not been possible to build on previous studies, for the same reason.
Future research

The aspects of service quality delivery in dental care that have been identified within this research project as being suitable topics for future research are shown below.

Service quality and corporatisation
The issue of access, labelled “responsiveness” during this research, is worthy of future research. The preference to operate as a single or two-practitioner practice may be the product of market forces, such as limited demand within the practice’s geographic (patient) catchment area, or may be based in some other rationale. The structure of a practice can have a direct effect on the ability of the dental practitioner to see patients in a timely manner. While the corporatisation of dental practices was not specifically identified as an option for future change during the project, the trend within e.g. general medical practices indicates that this is a contemporary option that cannot be ignored. The changes possible through alternate practice configurations, particularly through a corporatisation model, on the service quality factor related to responsiveness and the ability of the practice to see patients in a timely manner, should be investigated during future research projects.

Gender as an indicator of patient loyalty
While not reported within this paper, cross-tabulation analysis of the demographics of the respondents to the research project indicated that females seem to be three times more likely to travel greater than 50km to visit a dentist, with 9 percent of females and 3 percent of males falling into this category. This result should be treated with caution as no attempt has been made within this research project to discover the reasons behind this result. It is, however, recommended that the effect of gender and traveling distance on patient loyalty should be researched in future research projects as a possible influencer of patients’ perceptions of the reliability factor within service quality delivery.

Increased practitioner operating hours
This research identified patient attendance times as principally occurring between the hours of 8 a.m. and 5 p.m. on weekdays. When considering the tendency within the general retail sector to open longer hours and at weekends (a trend that includes medical centres, ancillary providers such as physiotherapists, naturopaths and pharmacists, but not usually medical specialists), a relevant question that should be posed in future surveys is: “at what time of day, and on which day would you rather visit the dentist?”, thereby attempting to address any potential imbalance between supply and demand within the dental marketplace and the potentially negative effects on the responsiveness factor within the service quality “mix” in dentistry.

Cancellation and/or missed appointment fees
The recent trend - reported anecdotally - towards dental practices charging patients a cancellation/missed appointment fee should they not provide sufficient notice to the practice of their (the patients) intention to cancel an appointment was not investigated within this research project and the acceptability of such a fee should be assessed in future research. Most private dental practitioners must effect a balance between efficiently structuring appointments and providing acceptable levels of access for their patients. The ability, however, for a practice to be recompensed for structuring appointments less efficiently, while improving patients’ perceptions of the responsiveness factor, may have a positive effect on the overall perception of the service quality delivered by dental practitioners.

Relationship between irrational and rational anxiety
This research identified the issue of irrational fear and anxiety as being a major barrier to attending the dentist at the recommended periodicity. Future research should investigate the actual level of pain and discomfort experienced as compared to the level anticipated prior to receiving the treatment. Thomson (2002) identifies patients that visit their dentist only when they experience problems as being twice as likely to suffer from dental anxiety as patients that visit their dentist on a regular basis. Improvements in the service quality factor “empathic assurance” may have a significant impact on how patients experience this phenomenon in the future, with improved communication between practitioner and patient offering the possibility that elements such as a “fear of the unknown” may be minimized.
Managerial implications

A number of facets of service quality have emerged as priorities for patients when analysing the responses provided during this research, and should be recognized by practitioners as having a significant impact on their patients’ overall satisfaction levels:

Fear and anxiety

The issue of fear and anxiety related to the pain and discomfort associated with dental treatments is worthy of further research. As this fear or anxiety has been reported by 27 percent of respondents as being the result of “irrational paranoia” or “bad past experiences (usually in childhood)”, this suggests that a large proportion of treatments do not result in the patient actually experiencing any significant levels of physical pain or discomfort. There may well be opportunities for the dental profession, on an industry-wide platform, to address these fears effectively, perhaps by acknowledging and publicising the improved techniques and advanced technologies available to contemporary practitioners. The resultant reduction in demand for un-scheduled emergency visits may result in measurable improvements in the “responsiveness” results, due to the dental practice’s ability to improve appointment scheduling and the punctuality of dentists delivering treatments to patients.

Punctuality

The importance of punctuality and the ability of the practitioner to value their patients’ time equally with their own should also be explored. Emergencies and unexpectedly extended appointments are an inevitable and unpredictable facet of operating most dental practices. The ability of the practitioner and the reception staff to communicate effectively the nature of any delays, together with the reasons for the delay, would be greatly appreciated by a number of respondents to this research, perhaps resulting in enhanced results within the “responsiveness” factor. Modern technology enabling the surgery to be linked to the reception desk by means of a networked computer system, together with the appropriate practice management software, provides opportunities for practitioners to communicate any delays to their front desk personnel in a quiet, effective and unobtrusive manner.

Waiting times

With both patient anxiety and lack of practitioner punctuality in delivering treatments emerging as facets that impact negatively on the respondents’ perceptions of service quality delivery within the “responsiveness” factor, it would be valuable to explore the relationship between the two to determine the level of causality - if any - that exists between patients’ anxiety levels and the punctual nature of the treatment delivery. If a causal relationship is inferred and then proven to exist between a patient’s anxiety level and the amount of time they spend in the dental waiting room, the practitioner will be presented with a choice of appropriate actions. A practitioner may, for example, discover that their practice is such that a large proportion of patients are kept waiting for an amount of time that causes their anxiety levels to increase.

Collaborative treatment planning

The collaboration between practitioners and patients in setting appropriate treatment plans was felt by many respondents to empower the patient and enhance their feelings of self-respect. Respondents have indicated that they prefer to be provided with choices or options regarding the treatment pathway to be explored, enabling them to retain the feeling that they have a degree of control over their “dental destiny” and enhancing their perceptions of service quality within the empathic assurance factor. From the practitioners’ perspective, obtaining the patient’s imprimatur when establishing the treatment plan provides a degree of assurance that the patient will be committed to seeing the treatment through to completion, which would be a desirable outcome for practitioners given the time and resource-intensive nature of many dental treatment plans.

Opening times

Feedback to the demographic section of the questionnaire indicated that on the last occasion that the respondents had visited the dentist, at least 90 percent of them had visited their dentist between 8 a.m. and 5 p.m. on a weekday. When cross tabulating these data, there were no significant correlations between the regular and irregular appointees and the timing of their respective appointments. However, only 46 percent of all respondents indicated that they had visited the dentist within the past six months, perhaps indicating a latent demand for opening hours beyond those currently available,
with the possibility of an improvement in the results achieved for the “responsiveness” factor in the service quality mix.

References


Evans, J.R. and Lindsay, W.M. (1999), The Management and Control of Quality, South-Western College Publishing, Cincinnati, OH.


Appendix. Modified SERVQUAL instrument

Expectations section

Tangibles

E1. Excellent dentists will have modern-looking equipment.

E2. The physical facilities at excellent dentists will be visually appealing.

E3. Employees of excellent dentists will be neat-appearing.

E4. Materials associated with the service (such as pamphlets or statements) will be visually appealing in an excellent dentist’s practice.

Reliability

E5. When excellent dentists promise to do something by a certain time, they will do so.

E6. When customers have a problem, excellent dentists will show a sincere interest in solving it.

E7. Excellent dentists will perform the service right the first time.

E8. Excellent dentists will provide their services at the time they promise to do so.

E9. Excellent dentists will insist on error-free records.

Responsiveness

E10. Employees of excellent dentists will tell customers exactly when services will be performed.

E11. Employees of excellent dentists will give prompt service to customers.

E12. Employees of excellent dentists will always be willing to help customers.
E13. Employees of excellent dentists will never be too busy to respond to customer requests.

Assurance
E14. The behavior of employees of excellent dentists will instill confidence in customers.
E15. Customers of excellent dentists will feel safe in their transactions.
E16. Employees of excellent dentists will be consistently courteous with customers.
E17. Employees of excellent dentists will have the knowledge to answer customer questions.

Empathy
E18. Excellent dentists will give customers individual attention.
E19. Excellent dentists will have operating hours convenient to all their customers.
E20. Excellent dentists will have employees who give customers personal attention.
E21. Excellent dentists will have the customers’ best interests at heart.
E22. The employees of excellent dentists will understand the specific needs of their customers.

Perceptions section
Tangibles
P1. My dentist has modern-looking equipment.
P2. My dentist’s physical facilities are visually appealing.
P3. My dentist’s employees are neat-appearing.
P4. Materials associated with the service (such as pamphlets or statements) are visually appealing at my dentist.

Reliability
P5. When my dentist promises to do something by a certain time, it does so.
P6. When you have a problem, my dentist shows a sincere interest in solving it.
P7. My dentist performs the service right the first time.
P8. My dentist provides its services at the time it promises to do so.
P9. My dentist insists on error-free records.

Responsiveness
P10. Employees of my dentist tell you exactly when services will be performed.
P11. Employees of my dentist give you prompt service.
P12. Employees of my dentist are always willing to help you.
P13. Employees of my dentist are never too busy to respond to your requests.

Assurance
P14. The behavior of employees of my dentist instills confidence in customers.
P15. You feel safe in your transactions with my dentist.
P16. Employees of my dentist are consistently courteous with you.
P17. Employees of my dentist have the knowledge to answer your questions.

Empathy
P18. My dentist gives you individual attention.
P19. My dentist has operating hours convenient to all its customers.
P20. My dentist has employees who give you personal attention.
P21. My dentist has your best interests at heart.
P22. Employees of my dentist understand your specific needs.

Point-allocation question
Directions
Listed below are five features pertaining to dentists and the services they offer. We would like to know how important each of these features is to you when you evaluate your dentist’s quality of service. Please allocate a total of 100 points among the five features according to how important each feature is to you - the more important a feature is to you, the more points you should allocate to it. Please ensure that the points you allocate to the five features add up to 100:
(1) The appearance of the dentist’s physical facilities, equipment, personnel, and communications materials: ___ points
(2) The ability of the dentist to perform the promised service dependably and accurately: ___ points
(3) The willingness of the dentist to help patients and provide prompt service: ___ points
(4) The knowledge and courtesy of the dentist’s employees and their ability to convey trust and confidence: ___ points
(5) The caring, individualized attention the dentists provides to patients: ___ points

Total points allocated - 100 points (Source: Parasuraman et al. (1999)).