



**THE APPLICABILITY OF SERVQUAL IN  
DIFFERENT HEALTH CARE  
ENVIRONMENTS**

**Alison M Dean**

25 SEP 1997 

*Working Paper 51/97  
July 1997*

**ABSTRACT**

This paper reports on a study that investigates the applicability of a modified SERVQUAL instrument as a means of measuring service quality in two types of health service environments; medical care, and health care (incorporating medical, social, cognitive and emotional elements). The research confirms a four factor structure that is stable for both environments, and similar to the service quality dimensions recognised in the literature. It also demonstrates the reliability and validity of SERVQUAL in this context but illustrates differences that highlight the complexity of health services. The dimensions of quality demonstrate quite different levels of significance to overall service quality for the two environments, and the relative importance of the dimensions is also shown to be inconsistent. These results confirm the suggestion that importance values should be part of the measurement tool. Finally, the extra diagnostic advantage achieved by the use of gap scores to measure service quality, when compared to perception only scores is demonstrated.

**Keywords**

Service quality  
SERVQUAL  
Health industry  
Australia

# THE APPLICABILITY OF SERVQUAL IN DIFFERENT HEALTH CARE ENVIRONMENTS

## INTRODUCTION

The importance of service quality in health care environments has been consistently acknowledged as a means of achieving increased patronage, competitive advantage and long term profitability (Brown and Swartz, 1989; Clow and Vorhies, 1993; Headley and Miller, 1993; Reidenbach and Sandifer-Smallwood, 1990; Woodside *et al.* 1989). As well as addressing issues related to competition, many health care providers are concerned with maintaining and enhancing their service quality in the face of increasing rationalisation, restructuring and demands for accountability of public services. A major thrust in terms of exploring and improving their service quality entails focussing on the customer, rather than the organisation (Gabbott and Hogg, 1995), and using the customer's perceptions to develop improvement strategies which ultimately lead to better health outcomes for consumers (O'Connor *et al.* 1994).

Service quality studies have tended to focus on establishing the determinants of quality in order to provide practical applications in the industry under consideration. This remains an important priority: Johnston (1995, p. 53) states that "the identification of the determinants of service quality is necessary in order to be able to specify, measure, control and improve customer perceived service quality". The predominant means by which service quality studies have been pursued is by use of the Gap theory, developed by Parasuraman *et al.* (1985), and reviewed and discussed by many authors (Babakus and Mangold, 1992; Bouman and van der Wiele, 1992; Carman, 1990; Chen *et al.*, 1994; Cronin and Taylor, 1992). In addition, many researchers have used the well developed and refined survey to measure quality, SERVQUAL, that has emerged in conjunction with the theory.

The SERVQUAL instrument was originally developed and tested, and its potential applications outlined by Parasuraman *et al.* (1988). It has subsequently been adopted, modified and reviewed by a large number of researchers across a wide variety of industry settings (Babakus and Boller, 1992; Bowers *et al.*, 1994; Chen *et al.*, 1994; Carman, 1990; Brown and Swartz, 1989; McAlexander *et al.*, 1994; Woodside *et al.*, 1989). Key issues in relation to the applicability of SERVQUAL question the relationship between expectations and importance, and the validity of using the service quality gap (the difference between expectations and perceptions) in preference to performance only measures (Teas, 1994, 1993; Cronin and Taylor, 1994; Bolton and Drew, 1991). The original authors, Parasuraman, Zeithaml and Berry (1988), have reviewed and refined the instrument themselves and continue to engage in the discourse that has progressed knowledge and application of service quality theory via the SERVQUAL instrument (1994, 1993, 1991). However, the ongoing debate suggests that there is still scope for research in service quality that is relevant to particular industries, and that pursues industry and situation specific implications in the use of SERVQUAL. Interest in these areas is the source of the major contributions of the current study.

### Dimensionality of service quality

One of the questions that continues to interest researchers is the number of dimensions of service quality in particular industries. It has been established by Parasuraman *et al.* (1988, 1991) that service quality can be considered as a function of five dimensions: tangibles, reliability, responsiveness, assurance and empathy. However, a number of studies have been conducted that have led to conflicting outcomes with respect to dimensionality (Bouman and van der Wiele, 1992;

Gabbott and Hogg, 1995; Johns and Tyas, 1996; Lam, 1995; Reidenbach and Sandifer-Smallwood, 1990). Asubonteng *et al.* (1996) conducted a comprehensive review of service quality studies, and consequently suggest that the service quality dimensions are likely to be industry specific. Prior to the review by Asubonteng *et al.* (1996), Babakus and Boller (1992) had also indicated that dimensionality may depend on the type of services under study and, in particular, be linked to the extent of customer involvement in the service. They found an essentially unidimensional structure for the gas and utility company in their study and proposed that this may have been due to the low involvement of consumers. However, Lam (1995) found only one factor for retail banking in Hong Kong, a service which can be considered as high involvement.

In relation to the high involvement environment of the health industry, the results of previous studies do not provide unqualified support for the proposition that dimensionality is industry specific. For example, Headley and Miller (1993) found six dimensions in medical services, while Lytle and Mokwa (1992) identified seven dimensions in health care (fertility) services. O'Connor *et al.* (1994) reported difficulty in translating the generic service quality dimensions into health care, and reported inadequate reliability with the Tangibles scale. In hospital settings, Carman (1990) found nine dimensions, Licata *et al.* (1995), twelve dimensions, and the results of a study by Taylor and Cronin (1994) indicated five dimensions for Expectations and four for Perceptions. Bowers *et al.* (1994) found that patients attending an army hospital define health care quality in terms of five dimensions that only partly replicate those of Parasuraman *et al.* (1988), namely empathy, reliability, responsiveness, communication and caring. Finally, using a modified SERVQUAL scale for hospital services, Babakus and Mangold (1992) found that the scale produced unidimensional measures of expectations and perceptions, and suggested that their observations indicate the need for further work on the dimensionality and abstract level of the construct. One major aim of this study is to identify the dimensions of service quality in the high involvement service environment of the health industry, and in particular, to explore two different contexts within that environment.

### **Health services explored in the study**

The health industry was chosen for this study for two major reasons. Firstly, it is considered to be a high involvement service which may have an impact on consumers' evaluations of service quality (Babakus and Boller, 1992; Cronin and Taylor, 1992), and other studies have suggested that service quality in health care is complex and may vary even within the industry. For example, studies of service quality in hospitals by Carman (1990) and Reidenbach and Sandifer-Smallwood (1990) indicate the complexity of service in these situations, and suggest that different functions or service areas within hospitals should be considered separately. Brown and Swartz (1989) investigated medical services from the perspective of both the client and the provider, and found that physician interactions are the most important variable in assessing quality. Thus, the research was designed to incorporate two distinct types of health service, both of which have an emphasis on the service encounter between consumer and provider.

Hult and Lukas (1995, p. 40) distinguish between medical care and health care. Their distinction is based on the complexity of offering: *medical care* essentially consists of a medical component, concerned with the diagnosis and treatment of disease whereas *health care* incorporates medical, social, cognitive and emotional factors. The study uses this distinction and explores service quality in terms of the *medical* focus of previous studies (Headley and Miller, 1993; O'Connor *et al.*, 1994) and broadens the scope to include a *health* care environment while still focussing essentially on the consumer-provider interaction. It does not include hospital settings. While the purpose of both environments studied is to ensure consumer health, it is suggested that their different components will impact on the consumer's assessment of service quality.

The two different health industry environments were selected within the same demographic area. The *medical care* environment is represented by Medical Centres, essentially General Practitioner services with the scope to provide specialist appointments on a limited basis, and thus existing predominantly to treat illness. The *health care* environment is represented by Maternal and Child Health Centres (MCHCs), a publicly funded community health service that has a number of elements including information provision, reassurance, education, suggestions for minor problems and possibly referral for major health problems. These health care centres (MCHCs) exist predominantly to create and maintain the health of babies and mothers, in comparison to the medical care centres (Medical Centres) where treatment of illness provides the *raison d'être*. The study therefore tests the SERVQUAL scale in both medical care and health care settings within the high involvement context of the health industry.

## RESEARCH AIMS

Overall, this study investigates the applicability of a modified SERVQUAL instrument to two different types of providers in the health industry. The specific objectives are to:

- establish the dimensionality of service quality in the two different healthcare contexts;
- confirm the reliability and validity of the modified instrument;
- investigate the value of importance measures; and
- explore the usefulness of the gap score between perceptions and expectations when compared to simple performance-based measures of service quality.

## PROPOSITIONS

- 1 A different number of dimensions for service quality will exist in health care when compared to medical care.
- 2 Importance values for the dimensions of service quality will provide a different emphasis in the two health care environments.
- 3 The use of gap scores will enhance the diagnostic value of the instrument when compared to perceptions only scores.

## RESEARCH METHODOLOGY

### The sample

The sample was randomly drawn from health providers in a rural area in Australia. The health providers consisted of five Medical Centres and 12 MCHCs. After obtaining the cooperation of the providers, execution occurred on-site (in waiting room facilities) and respondents were given the option to post. A high response rate was obtained with 90% of those approached agreeing to complete the survey immediately, 25 people (5% of requests) choosing to take reply paid envelopes and of those, nine (2% of the final sample of respondents) replied.

The total sample consisted of 490 respondents of which 374 (76%) were female. The two groups of respondents, from Medical Centres and MCHCs, had demographic details as follows. The Medical Centres sample consisted of 357 respondents, of which 244 (72%) were females and the majority were in the age brackets 25 - 34 (28%) and 35 - 44 (25%). In contrast, the MCHCs sample, consisting of 133 respondents, represented 130 females (98%) and 65% were in the age brackets, 25

- 34 years. In addition, only one person in the MCHCs sample was over 44 years. The demographic profiles of the samples were reviewed by two managers from participating centres and were considered to be representative.

### **The instrument**

The instrument was developed in accordance with information provided by Parasuraman *et al.* (1991) in which the original SERVQUAL scale was refined. For this study, the SERVQUAL scale was modified and reduced from 22 items to 15. Of the 15 statements used, 14 were identical to the revised SERVQUAL statements using the recommended approach to defining expectations, and negatively worded statements were not included. The essential content of the items included in the scale is shown in Table I, and the reasons for changing the scale are now discussed.

This study focuses on the service encounter between the consumer and the provider. Certain statements from SERVQUAL were therefore omitted as they were not applicable to the specific situations of one-to-one interaction being considered. Other statements were omitted as they were considered impossible for consumers to answer, or it was believed that they would cause confusion and therefore lead to unreliable responses. A similarly reduced SERVQUAL scale has been employed in studies by Carman (1990), Babakus and Mangold (1992), and Licata *et al.* (1995). The decisions about adjustments to the scale were made by two academics in consultation with one of the major providers. The statements omitted and brief explanations are included as Appendix 1. Finally, to complete the instrument, a statement was added that related to emergency arrangements (similar to a statement added by Carman 1990 for hospital services), and which was considered important by two of the providers.

In accordance with the recommendations of Parasuraman *et al.* (1991), and consistent with other medical service studies (Headley and Miller, 1993; O'Connor *et al.*, 1994), a seven-point Likert scale was used to collect data for both expectations and perceptions. For expectations the scale ranged from 1 (not at all essential for excellent clinics) to 7 (absolutely essential for excellent clinics); and for perceptions the scale again ranged from 1 (strongly disagree that this feature is present) to 7 (strongly agree that this feature is present). A value was obtained for overall quality of the service (OSQ) by asking respondents to allocate a score on a scale ranging from 1 (very poor) to 10 (excellent). Finally, also in accordance with the suggestions of Parasuraman *et al.* (1991, p. 424), the respondents to the survey were asked to allocate a total of 100 points to five statements to indicate the importance of the dimensions of quality, but they were not given the names of those dimensions. After piloting and minor adjustments in wording, the survey was executed.

## **RESULTS AND DISCUSSION**

### **Factor structure**

To explore the dimensions of quality for the two types of health service providers, a factor analysis was performed and the results are shown in Table I. The factor structure (eigenvalues greater than 1) is shown for the total sample (N = 490), and for the two groups from which the total sample is constituted: Medical Centres (N = 357) and MCHCs (N = 133). The factor scores are based on the gap values calculated by the difference between perceptions and expectations (P - E) and based on Varimax rotation in SPSS. It is of interest that Oblimin rotation produced almost identical factor structures.

The total sample indicated 4 distinct factors (eigenvalues >1) accounting for 67.9% of the variance, and the next eigenvalue fell to 0.72. Thus there is strong evidence for a four factor structure, which

approximates the dimensions of Parasuraman *et al.* (1988) corresponding to: Reliability/Responsiveness (loaded together), Assurance, Tangibles and Empathy. The four factor structure is replicated for both medical care (Medical Centres) and health care (MCHCs) accounting for 67.9% and 68.7% of the variance respectively. The results for the two types of providers are discussed in more detail in table 1.

While the factor structure for the MCHCs has more items loading across factors (see Items 3, 4 and 8), the similarities between patterns are striking. With regard to some particular Items: Numbers 4, 6, 7 and 8 are related to time and, as expected, all fall into the combined Reliability / Responsiveness factor; Items 5 (sincere interest in solving problems), 9 (never too busy to respond to customer requests) and 14 (employees who give customers personal attention) are all concerned with individual customer care and could be expected to load together. They do so for Medical Centres (with elements of Assurance) but for MCHCs, Item 9 loads with Item 14 (with the elements of Empathy) but Item 5 loads with Assurance. While the differences between the factor structures do not provide sufficient insights to warrant a distinction between them, there is, therefore, a suggestion that the factors identified may represent similar, but not identical dimensions for the two different environments.

Given that the SERVQUAL instrument was reduced to 14 items (and one new item added), the dimensionality results thus strongly support the early work of Parasuraman *et al.* (1988) and dispute the discrepancies found in some recent health industry studies (Babakus and Mangold, 1994; Headley and Miller, 1993; Licata *et al.*, 1995; Lytle and Mokwa, 1992; O'Connor *et al.*, 1994; Taylor and Cronin, 1994). In a health industry study in the United Kingdom, Gabbott and Hogg (1995) found six factors, four of which had considerable overlap with the factors of Parasuraman *et al.* (1988) and two which were specific to the service itself. These results suggest that the framework established by Parasuraman *et al.* (1988) does apply to the two health services investigated and that the current study could be further pursued, with an extended instrument, in an endeavour to establish other specific factors that influence service quality in particular types of health provision.

The important emphases of the factors as outlined by Parasuraman *et al.* (1988) are:

- Tangibles - appearances
- Reliability / Responsiveness - timeliness and dependability
- Assurance - courtesy and confidence
- Empathy - individual customer care.

In this study, for both types of providers four factors are established but the emphasis of them indicates some differences. In particular, the following contrasts are noted.

- The dimension, Tangibles, is replicated for Medical Centres but tends to split for MCHCs with the item representing appearance of employees loading with the dimension, Assurance. It is noteworthy that both Parasuraman *et al.* (1991), and Headley and Miller (1993) found that Tangibles tend to split into two factors, and O'Connor *et al.* (1994) were not satisfied with the reliability of this factor.

**Table I. Factor analysis based on Gap (Perceptions - Expectations) scores**

Essential focus of survey item	Total sample				Medical Centres				Maternal & Child Health Centres			
	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4
<b>Tangibles</b>												
1 Modern looking equipment			85				84					89
2 Physical facilities are visually appealing			86				84					89
3 Employees who are neat in appearance		38	60				65		57			42
<b>Reliability</b>												
4 When promise to do something by a certain time, does so	75					73			35	73		
5 Sincere interest in solving problems	54	53			53	49			49	69		
6 Provide service at the time promised	90					89				85		
<b>Responsiveness</b>												
7 Tell customers exactly when services will be performed	84					86				65		
8 Gives prompt service	61	44			46	65			43	32	40	36
9 Employees never too busy to respond to customer requests	49	58			63	47				39	54	
<b>Assurance</b>												
10 Behaviour of employees instils confidence		78			76				82			
11 Customers feel safe in their transactions		78			75				84			
12 Employees who are consistently courteous		82			82				77			
<b>Empathy</b>												
13 Operating hours convenient to customers				82				82			78	
14 Employees who give customers personal attention		61		34	66						71	
<b>Emergency arrangements</b>												
15 Arrangements to assist customers in emergencies	46			63		49		60			66	

Note: Loadings less than 0.3 are not shown and all loadings are multiplied by 100. Based on Varimax rotation for (P - E) gap scores.

- Reliability / Responsiveness retains the elements of timeliness and dependability but the items related to employee attitudes load with Assurance (for Medical Centres) and give a very diffuse pattern (for MCHCs), especially item 8 ("Gives prompt service"). These results demonstrate similarities to the 1991 study by Parasuraman *et al.* in that items 8 and 9 (using the current numbering system) also loaded with Assurance, and item 7 loaded evenly on Responsiveness. Since the dimensions Reliability and Responsiveness cannot be separated here, it is unclear whether the pattern is the same.
- Assurance, related to courtesy and confidence, is the most stable factor in both cases, but also attracts considerable loadings from items in other factors.
- Empathy in Medical Centres has only two items, related to operating hours and emergency arrangements whereas, for MCHCs, this dimension also includes individual customer care.

In summary, Table I illustrates that a four factor pattern is essentially present for both environments and therefore the first proposition guiding this study, that a different number of factors will exist in the two environments, is not supported. Table 1 does, however, highlight differences between the two providers, suggesting complexities that require further investigation. The original names of the factors are retained to facilitate comparisons but it is emphasised that the scale has been reduced, and because the results of the factor analysis indicate some differences between the two providers, overall generalisations in terms of healthcare need to be made with some caution.

It is of interest to compare the results of the factor analysis in this study to those obtained by Headley and Miller (1993), whose respondents were also consumers of medical services, and who responded to the 22 items on the SERVQUAL scale. Headley and Miller found six factors which accounted for 61.7% of the variance. Their factors included Dependability (encapsulating Assurance), Reliability, Responsiveness, Empathy, Tangibles (related to facilities and materials), and Presentation (of employees). Their items 7, 9 and 22, from the original SERVQUAL scale, did not load as expected and the dimension Tangibles split. In this study, items 7, 9, 22, and 4 (the materials component of Tangibles) were amongst the eight items that were omitted from the scale. As the factor analysis explained 67.9% of the variance in this case, there is therefore some support for use of the reduced scale to measure quality of the service encounter. This is investigated further in subsequent sections.

### **Reliability and validity**

Coefficient alpha is used to indicate the reliability of the instrument, and the coefficient alpha values for the four factors derived from the factor analysis are shown in Table II. The values for the first three factors indicate adequate internal consistency amongst the items and the fourth factor which consisted of only two items has a coefficient alpha of approximately 0.6 and is less reliable (Nunally, 1967). When compared to the other study of consumers of medical services that used SERVQUAL in its entirety (Headley and Miller 1993), the reliability of the reduced scale compares favourably. In particular, Headley and Miller obtained reliability values ranging from 0.58 to 0.77 for the six dimensions of service quality that they identified. In contrast, Parasuraman *et al.* (1991) obtained reliability values ranging from 0.83 to 0.93, but they did not investigate health, and in this study if the dimension with only two elements is not included, reliability has a similar range. Finally, O'Connor *et al.* (1994), working in a medical care environment, obtained values ranging from 0.79 to 0.92, but their study did not use gap scores and only considered expectations.

**Table II. Coefficient alpha values for the factors identified**

Dimension	No. of items	Total sample	Medical Centres	Maternal and Child Health Centres
Tangibles	3	.72	.73	.72
Rel'ty /Resp'ness	5	.87	.87	.81
Assurance	5	.83	.83	.80
Empathy	2	.57	.56	.63

When the reliability values are considered in relation to studies that use SERVQUAL in hospital settings, there is no consistent pattern that leads to a defensible conclusion. For example, considering studies that report the use of a reduced SERVQUAL scale, the mean result for reliability in this study is comparable to that obtained by Carman (1990) and better than that of Licata *et al.* (1995) but less reliable than Babakus and Mangold (1992). Similarly, where the full scale of 22 items has been used for hospital services, the current study produced results that are comparable to some (Walbridge and Delene, 1993; Bebko and Garg, 1995) but less reliable than others (Taylor and Cronin, 1994). Thus, while the reduced scale does not always indicate better reliability when compared to related studies, it is comparable in most cases and considerably better than the result for the similar study of Headley and Miller (1993).

The coefficient alpha values reflect the degree of cohesiveness among the items and convergent validity has already been demonstrated in the factor analysis where items essentially loaded together according to predictions based on the literature. However, high reliability and consistent factor structure are necessary, but not sufficient, for establishing the scale's construct validity (Churchill, 1979). Parasuraman *et al.* (1991) assessed validity more directly by regression analysis of Overall Service Quality (OSQ) against the dimensions of quality. This procedure has been adopted here and the results of the regression for the two different types of providers are shown in Table III.

**Table III. Regression analysis of OSQ versus the dimensions of quality (Dependent variable: Overall Service Quality (OSQ))**

	Medical Centres		Maternal and Child Health Centres	
	B	Beta	B	Beta
Tangibles	.15	.12**	.37	.35***
Rel./Resp.	.36	.26****	.42	.25*
Assurance	.53	.30****	.26	.12
Empathy	.30	.21***	.09	.09

Note: \*Significant at  $p < .03$ , \*\*Significant at  $p < .01$ , \*\*\*Significant at  $p < .001$ , \*\*\*\*Significant at  $p < .0001$

Table III shows that construct validity is supported by the high degree of convergence between OSQ and all the dimensions of quality for the Medical Centres (a medical service). The overall

equation is significant with the adjusted  $R^2 = 0.49$  for  $F(4, 357) = 66.74$ ,  $p < .0001$ . However, the test for the construct validity of SERVQUAL for the MCHCs provides an unexpected outcome. The adjusted  $R^2 = 0.35$  for  $F(4, 133) = 15.71$ ,  $p < .0001$ , which is relatively low compared to other studies. For example, Parasuraman *et al.* (1988) obtained a value of 0.52 in their original study which was also lower than their subsequent study (1991), where values ranging from 0.57 to 0.71 were obtained. Further, the convergence is significant for the dimension Tangibles and, to a lesser extent, for Reliability/Responsiveness but is not evident for Assurance and Empathy.

It is most interesting that the significant relationships shown in the Medical Centres for Assurance and Empathy are not duplicated for MCHCs (a health care service). It is suggested that, because of the complexity and the number of components in health care environments, the dimensions Assurance and Empathy may be evaluated separately to OSQ, as they may be more specifically related to other fundamental features of the service which are not encapsulated by SERVQUAL. As there is little evidence of examination of the validity of the SERVQUAL scale in health service studies, it is impossible to make assumptions about whether the differences for the health care setting are due to the reduction in the number of items in the instrument, or rather, the nature of the construct which may require new and additional items to define it when the consumer-primary provider service encounter is the focus of the evaluation.

In summary, the results of the reliability analysis compare favourably with the one similar study reported in medical centres, and are comparable to most other studies in hospital settings. Thus, as in the factor analysis, there is tentative support for the use of a reduced SERVQUAL scale but also suggestions that there may be other contributing elements in health care that are yet to be established. The investigation of validity reinforces this latter point, as construct validity is clearly demonstrated for the four dimensions in medical care settings but only for two dimensions in health care settings. The curious nature of this effect is made more dramatic when importance values are considered (see next section). Thus, while the primary purpose of the study was not to produce a shorter version of SERVQUAL, the instrument used here performs as well as the full SERVQUAL scale reported by Headley and Miller (1993) for medical care, and this suggests that the shortened version captures as much as SERVQUAL in the medical care context. However, the results are not convincing for the health care environment, suggesting that more research is required in this case.

### **Relative importance of the dimensions of quality**

One of the major propositions guiding this study was that the importance values for the dimensions of quality would provide a different emphasis in the two health care environments. To pursue this, and in accordance with the suggestions of Parasuraman *et al.* (1991), the respondents to the survey were asked to allocate a total of 100 points to five statements to indicate the importance of the dimensions of quality, but they were not given the names of those dimensions. (The names of dimensions are added in Table IV for convenience.)

The results shown in Table IV demonstrate that consumers of the two different types of health services do attribute different values to the importance of the dimensions of quality. In particular, consumers of MCHCs have indicated greatest importance to dimensions associated with Assurance and Empathy, whereas customers of Medical Centres scored Reliability the highest, consistent with other studies, for example, Chen *et al.* (1994). It was also expected that the importance of Tangibles may be relatively higher due to the association with the need for modern, sterile environments for health providers. This was not found to be the case but it is noteworthy that Tangibles exhibited a strong relationship to OSQ for the health care environment of MCHCs (as shown in Table III).

**Table IV. Importance of the dimensions of quality**

Dimension (statement used to explain)	Mean number of points allocated out of 100 points	
	Medical Centres	MCHCs
<b>Tangibles</b> The appearance of the centre's physical facilities, equipment and personnel.	17.6	15.1
<b>Reliability</b> The ability of the centre to perform the promised service dependably and satisfactorily.	23.5	18.8
<b>Responsiveness</b> The willingness of the centre to help customers and provide prompt service.	19.0	19.0
<b>Assurance</b> The knowledge and courtesy of the centre's employees and their ability to convey trust and confidence.	20.1	24.3
<b>Empathy</b> The caring, individualised attention the centre provides its customers.	20.8	23.0

Note: Values do not add to exactly 100.0 because of rounding error.

The allocation of highest importance to the dimensions Assurance and Empathy by consumers of MCHC services (Table IV) and the fact that they did not demonstrate a relationship to OSQ (Table III) indicates an intriguing complexity that suggests further research may be necessary to explore the construct of service quality in the health care environment, and in particular, to consider whether there are effects due to the social, emotional and cognitive elements that also characterise these situations. The importance of emotions in hospital services has been noted (Dube *et al.*, 1996) but does not appear to have been investigated and reported elsewhere. Whatever the underlying causes, the extra insight gained by obtaining importance values is reinforced here. A further benefit of acquiring importance values is that they can be used to obtain a composite, weighted estimate of OSQ for each type of service which can provide benchmark data on an ongoing basis. The contrast between importance and expectation values is considered within the next section.

#### Usefulness of Service Quality Gap scores

The final proposition guiding this study alleged that the use of gap scores enhances the diagnostic value of the instrument when compared to perceptions only scores. To commence the investigation into the usefulness of the Expectations and Service Quality (SQ) Gap measures, bivariate correlation coefficients were obtained as shown in Table V. The overall service quality (OSQ) values that respondents had assigned (on a scale of 1 to 10) were used, average scores for Expectations and Perceptions were calculated for the total sample, and the SQ Gap scores were used as computed for the Factor Analysis.

**Table V. Bivariate correlation values for Medical Centres and MCHCs**

Medical Centres (N = 357)			
	OSQ	Expectations	Perceptions
Expectations	.12*		
Perceptions	.80**	.30**	
SQ Gap	.70**	-.30**	.82**
MCHCs (N = 133)			
	OSQ	Expectations	Perceptions
Expectations	.12		
Perceptions	.74**	.39**	
SQ Gap	.60**	-.38**	.70**

Note: \*Significant at  $p < .05$ , \*\*Significant at  $p < .0001$

The data in Table V appears to support the view proposed by other researchers (Babakus and Boller, 1992; Carman, 1990; Cronin and Taylor, 1992) in that OSQ ratings correlate more highly with Perceptions than they do with the SQ Gap scores. If the use of the SQ Gap represented the best measure of service quality, one would expect the correlation between OSQ and the SQ Gap to be stronger than the correlation between OSQ and Perceptions. Superficially then, one could assume that the results in this study are consistent with Lam (1995, p. 38) who suggests that "expectations scores may not be contributing to the strength of the relationship between service quality and ... overall quality rating variables ... and (the findings) provide support for the simple performance-based measures of service quality". However, the implications of these results depend on the focus required by those applying the measurement of service quality. In their refuting of the use of perceptions only, Parasuraman *et al.* (1993) question whether an increased ability to explain variance is worth the potential loss of richer, more accurate diagnostics, and they reinforce this by reference to practical implications whereby inappropriate emphases may be placed on improvement efforts if only the Perceptions scores are used. This view of Parasuraman *et al.* is supported in this study and is evidenced by the data in Table VI.

**Table VI. Expectations, perceptions and SQ gap scores on the dimensions of quality in health care environments**

Dimension	Medical Centres (N = 357)			MCHCs (N = 133)		
	Exp'ns	Perc'ns	P-E Gap	Exp'ns	Perc'ns	P-E Gap
Tangibles	5.4	5.8	+0.4	5.5	5.6	+0.1
Rel'ty / Resp'ness	6.4	5.7	-0.7	6.5	6.4	-0.1
Assurance	6.6	6.2	-0.4	6.6	6.6	0
Empathy	6.3	5.9	-0.3	6.5	5.8	-0.7

With reference to the information for Medical Centres in Table VI, when Perceptions only are considered, managers may place considerable emphasis on improving Tangibles and Reliability / Responsiveness. However, the SQ Gap scores suggest that improvement efforts would be much

better directed towards the elements of Reliability / Responsiveness first, and then the other dimensions, *prior* to Tangibles. A similar conclusion can be drawn for MCHCs, where Tangibles score lowest on perceptions but the gap scores suggest that Tangibles is not a major problem, whereas there is a considerable deficit in the elements of Empathy.

It is also of interest to providers to note the very high expectations in all dimensions of this service except Tangibles, highlighting the need for managers to ensure that unrealistic expectations are not developed, or conversely, that marketing efforts are aligned with realistic performance delivery. In their conclusions, O'Connor *et al.* (1994) also emphasise the usefulness and importance of understanding patients' expectations in medical services. While it is useful to know that consumers have high expectations in most dimensions, the results for expectations shown in Table VI do not provide sufficient differentiation between the dimensions (apart from Tangibles) to support managerial decision-making. However, distinctions between dimensions can be achieved by using the importance values in conjunction with the SQ gap scores.

The importance values for Medical Centres (Table IV) indicate that consumers consider Reliability / Responsiveness as the most important dimension, and Assurance (where Expectations are highest) is somewhat lower in importance. As Reliability / Responsiveness also demonstrates the largest gap (Table VI), the need for attention in this area is reinforced. When the importance values for MCHCs are considered, the importance of the dimensions Assurance and Empathy is obvious but this is not the case when expectations are considered alone, as there is little to differentiate between Assurance, Empathy and Reliability / Responsiveness. However, the gap scores clearly suggest that Empathy is an area of concern. Thus, both the gap scores and the importance values provide important diagnostic information to managers and should assist in development of improvement strategies.

In summary, if one is seeking parsimony in the survey, correlation coefficients suggest that the use of perceptions scores only may be warranted, but the extra diagnostic applicability of the SERVQUAL Gap supports retaining expectations. Because of the lack of distinction provided by the use of expectations and the potential problems identified elsewhere (Cronin and Taylor, 1994; Teas, 1994, 1993; Clow and Vorhies, 1993), another means by which the SERVQUAL instrument could be applied is to ensure that data on importance ratings is collected and considered with the gap scores as a basis for drawing conclusions. If the data in Table VI is used in conjunction with the importance values shown in Table IV there is great clarity with respect to the emphasis that managers seeking to improve service quality should take.

## CONCLUSION

Exploration of service quality encounters in two health industry environments, medical care (Medical Centres), and health care (Maternal and Child Health Centres), has been pursued in this study. These environments were chosen because of their importance as services, and because of the high level of involvement of consumers in the service delivery. The results suggest that there are complexities in the service quality construct, and differences between the two environments, that are of particular interest to providers. In particular, the findings indicate four dimensions for service quality in each environment, and essentially support the factor structure established by Parasuraman *et al.* (1991) but there are discrepancies with respect to the dimension Tangibles, and some individual items; and much less variance was accounted for in the factor analysis for health care.

The modified SERVQUAL instrument was found to be reliable in both types of health industry service and construct validity was reinforced for the medical care situation. However, construct validity was not as evident for the health care situation and, in particular, the two factors attributed greatest importance in this environment, Assurance and Empathy, did not demonstrate a relationship to overall service quality. In contrast, Reliability was found to be most important to consumers of medical care services and, as with the other three factors, it demonstrated a significant relationship to overall service quality. Thus, the modified SERVQUAL scale can be applied but the research highlights the need to extend it to identify other factors that are specific to health industry environments, especially the multi-faceted health care environment.

Finally, the application of SERVQUAL in this study suggests that performance only measures can be used to assess quality, but the study supports the use of gap scores because of their diagnostic value, especially when used in conjunction with importance measures for the dimensions of quality. The data on the importance of the dimensions illustrated substantial differences between the two environments, with Reliability being most important in medical care, and Assurance most important in health care.

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Alison M Dean is a lecturer in Management, specialising in Service Operations and Management. She works in the School of Business & Electronic Commerce, Department of Management, Monash University, Australia.

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This research was supported by a grant from the Faculty of Business and Economics, Monash University, Australia. The author also acknowledges, with thanks, the co-operation of the Medical, and Maternal and Child Health Centres that participated in this study.

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## APPENDIX 1

### Summary of SERVQUAL items omitted

<i>Content of item from revised SERVQUAL instrument (Parasuraman et al. 1991)</i>	<i>Comments</i>
<b>Tangibles</b> 4 Materials associated with the service (pamphlets or statements) are visually appealing	There are no specific materials that relate to the service encounter and it was felt that inclusion of this item would confuse respondents and lead to inaccurate responses.
<b>Reliability</b> 7 Perform the service right the first time	The consumers are usually not in a position to assess or evaluate this item for the two health environments.
9 Insist on error-free records	The consumers do not have access to records and are not in a position to judge this item.
<b>Responsiveness</b> 12 Employees always willing to help customers	As the focus of the study is on the encounter with the primary provider who is providing a "helping" service, it was felt that this would confuse the respondents and contaminate the scale.
<b>Assurance</b> 17 Employees have the knowledge to answer customer enquiries	This is assumed for the encounter with the primary provider and was outside the scope of the study for other employees.
<b>Empathy</b> 18 Employees give customers individualised attention	Again, as all encounters are one-to-one situations, it was felt that this item would confuse respondents unless ancillary staff were nominated, and such information is outside the scope of the study.
21 Employees have customers' best interests at heart	This is considered a fundamental feature in the nature of the health services encounters and it was felt that requesting a score for it would lead to confusion, frustration and possibly careless responses.
22 Employees will understand specific needs of customers	As for item 21.