MEASURING PERCEPTIONS OF QUALITY IN NHS CLINICS USING THE 'SERVQUAL' METHODOLOGY

Introduction

The concern with quality is widespread throughout the NHS. All groups of professional workers are now concerned with the implementation of various quality measures to improve the levels of service, and satisfaction, experienced by patients. The impact of *The Patient's Charter*' is felt particularly acutely in the hospital sector where issues such as waiting times for a first outpatient appointment and waiting times within outpatient clinics have received particular attention.

The annual publication of 'League tables' has focused attention upon the measures of quality which many managers would recognise as being at best crude and at worst misleading. A prime example is the issue of waiting time within outpatient clinics. One of the principal objectives of *The Patients Charter*' is to ensure that all patients are seen within 30 minutes of their stated appointment time. In 1989 Cartwright and Windsor [1] reported that 45% of outpatients experienced a wait of 30 minutes or less whereas the 'system norm' in 1995 is now in excess of 80% Given that long waiting times in clinics has been felt to be a constant source of dissatisfaction, then at first sight the overall quality of outpatient clinics (or at least their booking systems) has improved.

Measures of Patient Satisfaction

With the rise of a more consumerist culture, the patient satisfaction survey has been seen as one of the principal mechanisms by which the 'voice' of the patient (or 'consumer') has been heard. Three lines of criticism have been advanced, however, which cast some doubt on the efficacy of measuring quality in this particular way. The first of these is methodological i.e. that surveys may be conducted with little regard to

statistical underpinnings such as a discussion of sampling errors or response rates, and with too great a reliance upon questionnaires consisting almost exclusively of 'forced choice' questions that conceal more than they reveal. A second line of criticism advanced by Carr-Hill [2] is that the majority of surveys do not attempt to elicit factors of dissatisfaction as well as satisfaction. A final, and potent, line of criticism is that patients are not in a technical position to assess the quality of professional care to which they have been subject and are only in a position to evaluate (and perhaps to over-evaluate) the 'hotel' services such as quality of food, availability of amenities and so on.

Even the evidence about the known sources of dissatisfaction may be ambiguous. Many surveys dating back over the decades have highlighted discontent over long waiting times in out-patient clinics of which Roberts [3] and Wilson [4] are representative examples. However, the study by Cartwright and Windsor [1] revealed that only 2% of patients found a wait of up to 30 minutes unreasonable - the dissatisfaction level only rose to 34% when patients had to wait up to an hour. There is evidence also that the provision of information regarding the reasons for delays leads to a decrease in dissatisfaction levels.

Nonetheless, reduction of waiting times within clinics is seen as a prime indicator of 'quality' in terms of adherence to *Patient's Charter* standards and in the publication of hospital league tables.

Patient Satisfaction and Patient Expectations

As Ranade [5] argues, consumers judge the quality of a service by comparing the perceptions of the service as received against expectations of what they should receive. In an industry such as healthcare, the experience of the patient is the 'product' which is being consumed. Satisfaction is undoubtedly a complex and multi-dimensional phenomenon both to define and to measure. However there

is now a weight of opinion, cited by Carr-Hill **[2],** to the effect that any measure of satisfaction needs to be related to the ways in which the outcome of care meets patients' expectations. It is now widely recognised that satisfaction has a strong relative dimension and must take account of the expectations against which episodes of patient care are experienced. This may help explain why older patients who can remember the pre-NHS days express higher levels of satisfaction than younger patients who have never known anything other than the NHS.

Measuring levels of satisfaction in service industries: the SERVQUAL scale

The problems of measuring quality in healthcare systems are not unique. Other analysts have applied themselves to the task of attempting to measure the satisfaction provided by service sector industries, particularly in the private sector. One approach which has attracted particular attention is the **SERVQUAL** scale formulated and developed by Parasuraman et. al.**[6]** In this approach, an underlying assumption is that service quality is critically determined by measuring the gap between customers' *expectations* of a service and their *perceptions* of the service as actually experienced. An extensive factor analysis of the different facets of service quality yielded the following five dimensions :

Tangibles	the appearance of the physical facilities, equipment, personnel and communication materials
Reliability	the ability to perform the promised service dependably and accurately
Responsiveness	the willingness to help customers and to provide prompt service
Competence	the knowledge and courtesy of employees and their ability to convey trust and confidence
Empathy	the caring, individualised attention the organisation provides its 'customers'

(Zeithaml   et.al.**[7])**

The literature of TQM is replete with examples of the semantic confusions between the concepts of 'customer' and 'consumer' and this is one of the reasons why TQM philosophies may be difficult to   import into the re-organised NHS without some reconceptualisation.   Whilst not revisiting this debate here, it is possible for practical purposes to replace the word 'customer' by 'consumer' or even   'patient' without doing violence to the **SERVQUAL** methodology.

The *perceptions-expectations* **(P-E)** gap in service quality is   measured across these five dimensions by means of a 22-item questionnaire.   As each dimension may not be equally important, each respondent is invited to allocate points (summing up to 100) which allows the respondents to reflect the relative importance of each dimension to them.   It is evident that the weighting given to various dimensions also differs across service industries, a factor such as 'empathy' being much more important in health, education and welfare than, say, in an industry such as insurance.

Applications of SERVQUAL to a sample of Leicester out-patient clinics

The **SERVQUAL** survey instrument has been applied to a sample of four outpatient clinics (enuresis, diabetes, paediatrics and general medical) with the following results:

Table 1 : Application to SERVQUAL to Outpatient Clinics
(Leicestershire, UK) July 1995

Dimension	Weight	Out-Patient Clinics(Leicestershire)		
		Perceptions [P]	Expectations [E]	Gap [P-E]
Tangibles	14	5.21	5.24	-0.03
Reliability	26	5.53	6.31	-0.79
Responsiveness	21	5.88	6.17	-0.29
Assurance	19	5.98	6.39	-0.41
Empathy	20	5.66	6.16	-0.50
n=	**72**			
Weighted average		**5.67**	**6.12**	**-0.45**

An overall small negative **SERVQUAL** score is a fairly typical result (as expectations of an ideal service typically are in excess of the quality of service as actually experienced). The **SERVQUAL** tool is designed, however, to be used as a managerial tool as well as a survey instrument as it indicates the *perceptions-expectations* gap on each of the five dimensions. In the case of the data above, it seems evident that the greatest gap in expectations lies in the *reliability* of the service rather than in the *tangibles* (buildings etc.) of the clinic and this then gives indications of the direction in which further quality improvement efforts should be directed.

In order to put these findings into context, a summary table is presented below in which the findings are also presented from:

- a large North American sample of consumers of five service industries. These include two banks, two insurance companies, and a long distance telephone company (Zeithaml et.al. [7] p. 28)

- study of a Home Help service provided by a Scottish local authority (Dalrymple et.al. [8])

- a study of inpatients at a hospital in the East of England (Tomes and Ng [9]). This study used the **SERVQUAL** methodology but the authors developed a new survey instrument. The results are not, therefore, strictly comparable with those obtained in the other three studies in the table in which the same instrument was used. Only overall ranges and not means were quoted in the study. Even so, the results display a great consistency with the other British studies.

Table 2 : Summary table of SERVQUAL scores

	Perceptions [P]	Expectations [E]	Gap [P-E]	
American data	5.28	6.27	-0.99	(n=1936)
Scottish (Home Help)	6.03	5.53	+0.50	(n= 124)
[English (Inpatients)	(5.6)(6.3)	(5.1)(6.4)	(+0.5)(-0.1)	(n= 132)]
English (Outpatients)	**5.67**	**6.12**	**-0.45**	**(n= 72)**

Comparison of outpatient SERVQUAL scores with other studies

It is important to stress that the **SERVQUAL** scores obtained should be seen as complementing rather than replacing the traditional methods of measuring patient satisfaction. As Parasuraman et.al **[10]** themselves argue, **SERVQUAL** is a useful starting point, not the final answer, for assessing and improving service quality. **SERVQUAL** is most valuable when it is used periodically to track service quality trends, and when it is used in conjunction with other forms of service quality measurement. The strength of the **SERVQUAL** methodology lies in the fact that the research instrument has already been deployed in many other studies and comparisons are therefore possible both over time and between various service sector industries.

It appears that the expectations of the sample of outpatients is somewhat lower than the American sample whilst the level of services experienced is actually higher. The 'gap' for English outpatients at -**0.45** is less than half of that for the sample of American consumers of private services at **-0.99.** In the light of the small sample size for the outpatient clinics, applying a confidence interval to the results indicates that we can be 95% confident that the scores obtained from a much larger sample size would be in the range of mean � 0.27 for *perceptions* and mean � 0.18 for *expectations:*

Confidence intervals at 95% level:
Perceptions   **5.40 - 5.94**   Expectations **5.94 - 6.30**

Reformulation of the SERVQUAL scale

SERVQUAL uses a standard 7-point Likert scale (numbered 1-7) and computes 'gap' scores by a simple process of subtraction (Perceptions-Expectations). An implicit assumption is that the scale is an interval scale in which the interval say from 5-6 is 'the same' as the interval

between points 6-7. This assumption may not be justified. The scale is clearly an ordinal one but whether it satisfies the conditions to make a genuine interval scale remains a moot point. It seems more likely that instead of using an *'equal distance'* scale in their minds, respondents actually deploy an *'increasing resistance'* model in which it is easier (in psychometric terms) to move from the central point (point 4) to its immediate neighbour (point 5) than it is to move from a position of near perfect satisfaction (point 6) to perfect satisfaction (point 7). To overcome this objection, it is suggested that the following scale be deployed, derived from the application of a binomial distribution. The mathematical underpinning is more fully described elsewhere [11]

Points on the scale	1	2	3	4	5	6	7
Values associated with each point	-6	-3	-1	0	1	3	6

When this reformulated scale has been deployed on the English outpatients scores, it has the overall effect of accentuating the perceptions-expectations gap by approximately **-0.5**. The use of the modification is suggested in addition to standard **SERVQUAL** methodology to increase its discriminant power. A negative gap is actually only found in approximately 30% of statement pairs, the remainder representing either no difference between perceptions and expectations or else a positive gap.

Computational considerations

The model can be can be used on any standard spreadsheet. Perceptions and expectations can be entered in rows and difference scores obtained by subtraction (or the use of a lookup table in the case of the reformulated **SERVQUAL**). Each of the five dimension scores are

computed for each respondent giving a series of unweighted **SERVQUAL** scores. As each respondent has also been asked to weight the importance of each dimension by allocating scores which sum to 100, these weights can then be applied to each respondents unweighted score to produce a weighted score. Total measures on each dimension are arrived at by a simple process of summation and/or averaging.

Appendix 1: QUALITY OF SERVICE Questionnaire

Based on your experiences as a patient in a hospital or clinic, please think about the kind of hospital or clinic that would deliver excellent quality of service.   Think about the kind of hospital or clinic in which you would like to receive treatment.   Please show the extent to which you think such a hospital or clinic would possess the feature described by each statement.   If you feel a feature is *not at all essential* for excellent hospitals/clinics such as the one you have in mind, circle the number **1.** If you feel a feature is *absolutely essential* for excellent hospitals/clinics, circle **7.**   If your feelings are less strong, circle one of the numbers in the middle.   There are no right or wrong answers - all we are interested in is the number that truly reflects your feelings regarding hospitals/clinics that would deliver excellent quality of service.

		Strongly Disagree					**Strongly Agree**	
1.	Excellent hospitals/clinics will have modern looking equipment.	1	2	3	4	5	6	7
2.	The physical facilities at excellent hospitals will be visually appealing.	1	2	3	4	5	6	7
3.	Personnel at excellent hospitals/ clinics will be neat in appearance.	1	2	3	4	5	6	7
4.	Materials associated with the service (such as pamphlets or statements) will be visually appealing in an excellent hospital/clinic.	1	2	3	4	5	6	7
5.	When excellent hospitals/clinics promise to do something by a certain time they will do so.	1	2	3	4	5	6	7
6.	When a patient has a problem, excellent hospitals/clinics will show a sincere interest in solving it.	1	2	3	4	5	6	7
7.	Excellent hospitals/clinics will get things right the first time.	1	2	3	4	5	6	7
8.	Excellent hospitals/clinics will provide their services at the time they promise to do so.	1	2	3	4	5	6	7
9.	Excellent hospitals/clinics will insist on error-free records.	1	2	3	4	5	6	7

		Strongly Disagree						Strongly Agree
10.	Personnel in excellent hospitals/ clinics will tell patients exactly when services will be performed.	1	2	3	4	5	6	7
11.	Personnel in excellent hospitals/clinics will give prompt service to patients.	1	2	3	4	5	6	7
12.	Personnel in excellent hospitals/clinics will always be willing to help patients.	1	2	3	4	5	6	7
13.	Personnel in excellent hospitals/clinics will never be too busy to respond to patients' requests.	1	2	3	4	5	6	7
14.	The behaviour of personnel in excellent hospitals/clinics will instil confidence in patients.	1	2	3	4	5	6	7
15.	Patients of excellent hospitals/clinics will feel safe in their dealings with the hospital/clinic.	1	2	3	4	5	6	7
16.	Personnel in excellent hospitals/clinics will be consistently courteous with patients.	1	2	3	4	5	6	7
17.	Personnel in excellent hospitals/clinics will have the knowledge to answer patients' questions.	1	2	3	4	5	6	7
18.	Excellent hospitals/clinics will give patients individual attention.	1	2	3	4	5	6	7
19.	Excellent hospitals/clinics will have operating hours convenient to all their patients.	1	2	3	4	5	6	7
20.	Excellent hospitals/clinics will have staff who give patients personal attention.	1	2	3	4	5	6	7
21.	Excellent hospitals/clinics will have the patients' best interests at heart.	1	2	3	4	5	6	7
22.	The personnel of excellent hospitals/ clinics will understand the specific needs of their patients.	1	2	3	4	5	6	7

Listed below are five features pertaining to hospitals/clinics and the service they offer. We would like to know how important each of these features is to *you* when you evaluate the service offered by a hospital or clinic. 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 hospital/clinic physical facilities, equipment, personnel and communication materials. _____ points

2. The hospitals/clinic's ability to perform the promised service dependably and accurately. _____ points

3. The hospital/clinic's willingness to help patients and provide a prompt service. _____ points

4. The knowledge and courtesy of the hospital/clinic personnel and their ability to convey trust and confidence. _____ points

5. The caring, individualised attention the hospital/clinic provides its patients. _____ points

TOTAL points allocated **100** **points**

_____

Which one feature of the above five is **most important** to you ? _____
(Please enter the feature's number)

Which feature is **second** most important to you ? _____

Which feature is **least** important to you ? _____

The following set of statements relate to your feelings about the hospital/clinic you have attended. For each statement, please show the extent to which you believe the hospital/clinic has the feature described by the statement. Once again, circling a 1. means that you strongly disagree that the hospital/clinic you have attended has this feature and circling a 7. means that you strongly agree. You may circle any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers - all we are interested in is a number that best shows your perceptions about the hospital/clinic which has treated you.

		Strongly Disagree					**Strongly Agree**	
1.	The hospital/clinic has modern-looking equipment.	1	2	3	4	5	6	7
2.	The physical facilities in the hospital/clinic are visually appealing.	1	2	3	4	5	6	7
3.	Personnel in the hospital/clinic are neat in appearance.	1	2	3	4	5	6	7
4.	Materials associated with the service (such as pamphlets or statements) are visually appealing.	1	2	3	4	5	6	7
5.	When the hospital/clinic promises to do something by a certain time it does so.	1	2	3	4	5	6	7
6.	When you have a problem, the hospitals/clinic shows a sincere interest in solving it.	1	2	3	4	5	6	7
7.	The hospital/clinic gets things right the first time.	1	2	3	4	5	6	7
8.	The hospital/clinic provides its services at the time it promises to do so.	1	2	3	4	5	6	7
9.	The hospital/clinic insists on error-free records.	1	2	3	4	5	6	7

		Strongly Disagree					Strongly Agree	
10.	The personnel in the hospital/clinic tell you exactly when services will be performed.	1	2	3	4	5	6	7
11.	Personnel in the hospital/clinic give you prompt service.	1	2	3	4	5	6	7
12.	Personnel in the hospital/clinic are always willing to help you.	1	2	3	4	5	6	7
13.	Personnel in the hospital/clinic are never be too busy to respond to your requests.	1	2	3	4	5	6	7
14.	The behaviour of personnel in the hospital/clinic instils confidence in you	1	2	3	4	5	6	7
15.	You feel safe in your dealings with the hospital/clinic.	1	2	3	4	5	6	7
16.	Personnel in the hospital/clinic are consistently courteous with you.	1	2	3	4	5	6	7
17.	Personnel in the hospital/clinic have the knowledge to answer your questions.	1	2	3	4	5	6	7
18.	The hospital/clinic gives you individual attention.	1	2	3	4	5	6	7
19.	The hospital/clinic has operating hours convenient to all its patients.	1	2	3	4	5	6	7
20.	The hospital/clinic has personnel who give you personal attention.	1	2	3	4	5	6	7
21.	The hospital/clinic has your best interests at heart.	1	2	3	4	5	6	7
22.	The personnel of the hospital/clinic understand your specific needs.	1	2	3	4	5	6	7

_____

Thank you for the time you have spent in completing this questionnaire.   The results will help us to provide you with the best possible service in the future.

Appendix 2:   SERVQUAL procedures

Dimensions

Statements	**1-4**	Tangibles
Statements	**5-9**	Reliability
Statements	**10-13**	Responsiveness
Statements	**14-17**	Assurance
Statements	**18-22**	Empathy

Procedures

1.   Compute the 'gap' for each statement pair for each consumer.

SERVQUAL score = Perceptions Score - Expectations Score

2.   Compute the dimensions scores for each respondent by averaging the gap score over the relevant number of   statements (either **4** or **5** statements)

3.   Derive **SERVQUAL** respondent's scores in the following way:

Unweighted scores   Sum dimensions and divide by 5

Weighted scores Tangibles *****   (Tangibles Weight/100) **+**
Reliability *****   (Reliability Weight/100) **+**
Responsiveness ***** (Responsiveness Weight/100) **+**
Assurance *****   (Assurance Weight/100)   **+**
Empathy *****   (Empathy Weight/100)

4.   Derive total **SERVQUAL** scores by totalling the scores and dividing by **N** of respondents

References

1. Cartwright,A. and Windsor,J.   *Outpatients and their Doctors.*
    London: HMSO,1992:p.59

2. Carr-Hill,R.A.   'The measurement of patient satisfaction.'
    Journal of Public Health Medicine 1992; Vol.14(3):236-249

3. Roberts,S.   'Why are we waiting?'   *Nursing* 1990; Vol 4(10):29-31

4. Wilson,M.   'No time like the present. ' *Health Service Journal*
    1993; 25 November

5. Ranade,W.   *A future for the NHS? Health care in the 1990's.*
    London:Longman,1994:p.108

6. Parasuraman,A.,Zeithaml,V.A. and Berry,L.   '**SERVQUAL**: A
    Multiple-Item Scale for Measuring Consumer Perceptions of
    Service Quality.'   *Journal of Retailing*   1988; 64:12-40

7. Zeithaml,V.A.,Parasuraman,A. and Berry,L.L.   *Delivering
    Service Quality*,   The Free Press,1990

8. Dalrymple,J.F.,Donnelly,M.,Wisniewski,M. and Curry,A.C.
    'Measuring service quality in local government.'
    In: Kanji,G.K.(ed.):*Total Quality Management*,
    London:Chapman and Hall,1995

9. Tomes,A.E. and Ng,S. ' Service quality in hospital care: the
    development of an in-patient questionnaire.'   *International
    Journal of Health Care Quality Assurance*. 1995; 8(3)

10. Parasuraman,A.,Zeithaml,V.A. and Berry,L.   'Reassessment of
    Expectations as a Comparison Standard in Measuring Service
    Quality: Implications for Further Research. '   *Journal of
    Marketing*   1994; (January) 58:111-124

11. Hart,M.C.   'Measuring Perceptions of Quality of Public
    Services.'   Paper read to: *European Group of Public
    Administration*, Erasmus University, Rotterdam, 1995
    (September)