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**DEVELOPMENT OF A TOOL  
TO MEASURE SERVICE QUALITY,  
FROM THE PATIENTS' PERSPECTIVES,  
IN A NEW ZEALAND PUBLIC HOSPITAL.  
IS SERVQUAL THE ANSWER?**

A thesis submitted to the Institute of Technology and Engineering, Massey University,  
in partial fulfilment of the requirements of the degree of  
Master of Philosophy.

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## Abstract

The measurement of service quality, using a two part customer questionnaire called SERVQUAL, has been described in the literature by a number of authors. The model itself, was developed from research conducted in the credit card, long distance telephone, banking, repair and maintenance service industries.

The model utilises a technique called disconfirmation which is a measure of the gap between similar components of the two questionnaires that the customers receive. For this project, it is a measure of the difference between the perception and the expectation of the service that elective surgical patients received at a provincial public hospital.  
i.e. Service Quality = perception - expectation.

The basis for this project has been the Tomes and Ng (1995) healthcare modification of the original SERVQUAL, which they used with some success, in a public hospital in England. The service quality was measured over a number of aspects of the service called dimensions. In this case there are eight dimensions, namely; Understanding of Illness, Relationship of Mutual Respect, Dignity, Empathy, Physical Environment, Food, Religious needs and Cultural needs. No evidence could be found of the application of the technique within the health sector in New Zealand.

This project has attempted to assess the usefulness of this disconfirmation based technique, as a measure service quality, from the patients point of view, in a provincial hospital in New Zealand.

DECLARATION

I declare that this research report is my own, unaided work. It is being submitted in partial fulfilment of the requirements for the degree of Master of Philosophy at Massey University.

It has not been submitted before for any degree or examination in any other University.

*Malcolm Rees*  
.....  
(Name of candidate)

..... *20* ..... day of ..... *December* ..... 2000.

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## 1. INTRODUCTION

The need for change within the healthcare sector in New Zealand has resulted in a radical health reform process over the last twenty years. Despite variations in the mode of health care delivery world wide, there seem to be three constraints common to health care systems in developed countries, namely: an aging population, rapid advances in medical technology and greater expectations from patients. While the public may expect a comprehensive service, the government in this country has signalled that we can no longer afford the luxury of an unlimited supply of health care resources (Blank 1994).

There have been a number of permutations to the various organisations during the restructuring process, such as Regional Health Authorities (RHA) and Crown Health Enterprises (CHE), which were established to separate the funding from the supply of healthcare. This was a significant development designed to apply a degree of commercialism and competition to healthcare in an attempt to cap expenditure.

One aspect that has not received much focus during this reform has been in the area of quality management where quality systems and associated policy formulation seem to be arranged on a purely ad hoc basis. Patient-acquired quality information is almost non-existent.

In a review of the theoretical perspectives of quality, Walbridge and Delene (1993) separated quality into two sections, firstly what is provided and secondly, how it is provided. In the case of service quality in a hospital, these could be described as *technical quality* and *functional quality*. This project focuses on the measurement of the functional aspect of service quality within a public hospital.

The technique used is called SERVQUAL which measures, by disconfirmation, the gap between expectation and perception of the service provided, by using customer questionnaires, thereby providing a customer or patient-focused approach to the measurement of this aspect of service quality.

A number of modifications to the original SERVQUAL model proposed by Parasuraman, Zeithaml and Berry (1990) have been undertaken for service industries. However, very few have been developed for the healthcare sector. No evidence could be found in the literature for the application of the model within the healthcare sector in this country. One modification that did seem applicable was developed by Tomes and Ng (1995) for the National Health Service (NHS) in England. That project described a SERVQUAL tool with eight quality dimensions, six of which relate to intangible aspects of care, and two of which relate to tangible aspects of care.

This project has attempted to ascertain the effectiveness of the Tomes and Ng (1995) SERVQUAL modification, for the measurement of service quality, in a public hospital in New Zealand.



## **2. SIGNIFICANT PRIOR RESEARCH**

### **2.1 Health Reforms in New Zealand**

Health reforms in New Zealand began to gain momentum in the 1970s with the Labour Party's White Paper on health, which introduced the concept of the need for the rationing of health services. Further development was slow until the 1980s, when expenditure on health in New Zealand rose from 5.1 to 7.2% of Gross Domestic Product (GDP).

Momentum began to increase in 1983, when the Area Health Boards Act decentralised health management away from central Government and the Department of Health, with the result that, by 1989, 14 Area Health Boards had been established. During this time population-based funding was introduced - the most significant change to hospital funding since free healthcare was introduced in 1938. This was introduced by the government in an attempt to cap hospital funding.

Continued inequity in health service distribution and lengthening waiting lists culminated in two significant reviews: the 1986 Health Benefits Review, which provided the government with options for delivery and, in 1988, the Hospital and Related Services Task Force Report commonly known as the "Gibbs Report". The Gibbs Report recommended the separation of the provision and funding of health by the establishment of six Regional Health Authorities (RHAs) which would buy health services from various health providers, for a specific geographical area. Funding was to be based on a costing device called a *Diagnostic Related Group* (DRG), which established an average cost for each medical event. The shift was towards competition, and provision of core services only.

The Labour government of the day rejected the findings of the Gibbs report, however they were accepted by a subsequent National government and became the cornerstone of a significant change to healthcare provision in this country.

In 1993 four RHAs were created to fund health and disability services. AHBs were abolished and 23 Crown Health Enterprises (CHE) were established to provide health services in a conventional business-like manner. Other health providers were given the opportunity to bid to provide services, thus introducing competition between providers. A Public Health Commission was established to monitor the progress and the state of the system and report to the Ministry of Health (Blank, 1994). The Crown Company Monitoring Advisory Unit (CCMAU), an arm of Treasury, was established to monitor the performance of the CHEs ( MoH, 1997).

A key policy statement in 1995 titled “Advancing Health in New Zealand” from the then Ministry of Health, Hon Jenny Shipley, outlined three goals for the healthcare delivery strategy for the next 10 years.

*“To improve the health of people in New Zealand.*

*To put people at the centre of service delivery.*

*To get the greatest amount of health and disability support services for the dollars available.”*

(MoH, 1995, pp. 8,9).

To support this focus, New Zealand Health Informatics Services (NZHIS) was established to provide timely and meaningful information to measure the achievements, by compiling customer service information and health and disability information to ensure that the goals were being achieved (MoH, 1996).

The Coalition Government elected in 1996 outlined changes to the strategies previously undertaken, re-focusing on the family and disadvantaged groups by developing the following strategy:

*“Family health teams [should be established] for the delivery of some primary health care services by CHE’s.*

*Increased emphasis on Mental health, Maori health and Child health to improve health status and reduce disparities in health status.”*

(MoH, 1997, p 4)

The 1996 Coalition Agreement between the National Party and New Zealand First also saw a softening of the commercial approach with the amalgamation of the four RHAs into one Health Funding Authority (HFA), which came into being in January 1998, and removal of the profit motive for publicly-owned hospitals. (MOH, 1997). CHEs were replaced by Hospital and Health Services (HHS).

Throughout this investigation of the health provision strategy, no one document was found which covers all aspects of health care delivery and policy. This reflects the complexity of health provision and the need to integrate a large number of stakeholders. What started as a revolution in health reform appears to have gradually mellowed into an evolution of health funding, rationing, policy and systems development as bureaucrats have come to realise the complex, emotional and individual nature of health care provision.

A central theme remains, however, that people are still at the centre of the delivery process- but, at the same time, this has to be balanced against diminishing financial resources- rationing is here to stay.

A theme that is not well developed within this reform process is in the area of quality management systems and where these sit in relation to the other reform processes being

undertaken. Healthcare performance indicators are still primarily financial (MoH, 1998) or clinical (from the New Zealand Health Information Service).

A sad reflection of the effect of the changes in the system, without a concurrent focus on quality of service, has seen the unnecessary loss of life at Christchurch Hospital. The subsequent report from the Health and Disabilities Commissioner cites inadequacies in many areas within this “reformed” system (Health and Disability Commissioner, 1998). The reforms appear to have centred purely on cost containment with little attention being given to quality, demand for service, customers or the measurement of satisfaction with the service. Reduction in variation has appeared to be abstract concept. This is perhaps attributable to the imbalance in the model that has focused on short-term fiscal goals at the expense of long-term strategies such as quality of care. It is debatable whether or not the current strategy by itself will be effective, without concurrent quality improvement initiatives.

The patients’ role in providing information about the reform process or their experiences from within the system is not well defined. Little customer/patient or customer service quality information is collected. If the healthcare system exists for this group, then a greater consideration of their needs is required.

A worthwhile policy platform against which healthcare resources could be designed which also included aspects of quality management, came from Brook (1997), who said that:

*Every one should receive all necessary health care provided that it is within the financial capacity of the country to pay.*

*Variation should be reduced across three dimensions; appropriateness, excellence and humaneness.*

*Care should be provided efficiently” (Brook, 1997, p 1614).*

This is a worthwhile approach that should include both quality management systems and associated measurement processes to reduce variation and improve efficiency. This project develops a customer focus by providing an option for information collection that is derived from the patients-thereby addressing one aspect that is currently not well covered.

## 2.2 What is Quality?

What, then, is *quality* and how does it relate to the healthcare sector? A number of definitions of exist within the literature. The one chosen here describes quality in the following manner:

*“Quality is consistently meeting the continuously negotiated expectations of customers and other stakeholders in a way that represents value for all involved”*

(Kruithof and Ryall, 1994, p.20).

Whilst the definition is sound, it raises a number of issues for healthcare because healthcare seems to be structured so that it meets the needs of the stakeholders other than those from the customer (the patient). Complicating this argument is the highly technical nature of the service which includes a number of stakeholders with patients often being treated as ‘*work in progress*’ because most aspects of the service are apparently too technical.

This raises two questions: Firstly, who are the primary customers or stakeholders? Are they the patients, or are they the other stakeholders or even perhaps the funders? Secondly, what is being provided? Are we consistently providing the negotiated needs of the most important customer group? We are not currently canvassing much in the way of patient based healthcare information.

## 2.3 Background to Quality Management Frameworks within Healthcare

Quality Management Systems (QMS) within healthcare come under the umbrella of the International Society for Quality in Health Care (ISQua). They have improved the accountability of healthcare standards by convergence with the International Standards Organisation’s (ISO) series of standards called the ISO 9000 standards, thereby reducing both confusion and differences in terminology (Shaw, 1997).

Despite the existence of ISQua, many of the QMS that currently operate within the healthcare industry seem to have developed largely out of the systems approach taken by the Joint Commission on Accreditation of Healthcare Organisations (JCAHO) in the United States of America. Over the last 50 years they have developed Quality Management Systems for a number of healthcare professional groups. Currently, JCAHO accredits more than 18,000 healthcare organisations in the USA (JCAHO, 1999a). In some instances accreditation is linked to funding levels and access, but mostly accreditation is voluntary.

A recent development in the American model has seen the need for performance indicators i.e. actual quantitative measures to ascertain if the necessary quality standard is being maintained. However, such measurement tools are yet to be implemented. (JCAHO, 1999b).

Godfrey and Halder (1997) have taken the view that the ISO standards are not suitable standards on which to base healthcare quality because they are product-based, with few relevant outcome measurements for healthcare. Furthermore they also describe the difficulty in standardising medical practice, and therefore the difficulty in defining a written set of criteria across the healthcare sector. In addition, they note that the skills of the auditors involved with the accreditation are questionable. They would prefer to see a new health care approach comprised of a mix of the ISO system, and that of a company wide quality management systems called the Malcolm Baldrige Quality Awards system. Along with these they also see the need for identifiable clinical, quality and patient satisfaction measures, followed by benchmarking in order to identify world class results.

The systems approaches appear to be either technical and global, with criteria focused primarily on critical events such as infection rates, morbidity and mortality-or financial in content, such as cost per patient, bed rates and lengths of stay effects on budget. The feature lacking from the existing quality systems approaches is a focus on the customer.

Two specific quality systems namely; Continuous Quality Improvement and Total Quality Management are presented, separately, as they are described in the literature. It could be argued, however, that they are in fact describing the same quality management system. It depends on ones definition of CQI and TQM.

### **2.3.1 Continuous Quality Improvement (CQI) within Healthcare**

CQI is used by many hospitals as a quality strategy. It requires the description, measurement and constant improvement of key processes to meet customer needs more effectively. Chan and Ho (1997) analysed the application of CQI into both American and Canadian hospitals. Of the 3300 hospitals canvassed in the USA, 70 percent had implemented CQI in some form or other. However, they do comment that interest in CQI has declined. One of the reasons given for this was that many of the decisions within a hospital are made by doctors who are not under the control of those trying to implement CQI. The lack of control over this group makes the improvement process subject to both personal wishes and/or political influences. Despite these doubts, 80% of the hospitals canvassed reported that CQI was beneficial. This point raises the complexity of healthcare organisations with dominant technical stakeholders who are influential, yet who are usually not familiar with QMS concepts.

Two recent high profile cases in New Zealand namely the inaccurate reading of large numbers of cytology smears and the inaccurate diagnosis of breast cancer (which resulted in an unnecessary mastectomy) support the view that the culture within the health sector in this country can be blase towards quality. Despite having quality management systems in place for both laboratories and hospitals generally, critical mistakes do still occur.

Nerenz (1997), cites the need for change to the current organisational culture, as a whole, rather than to discrete individual processes, if CQI is to succeed. Maguerrez (1997),



describes the use of this stepwise process in French hospitals, and notes that not all first attempts at CQI will be successful. However, this should not detract from the overall value of the technique. Goldman (1997) suggests that, if you want to make CQI successful, you have to get the processes within the systems right. This will involve some very clear descriptions of: the intentions of the methods to be used, what is going to be measured, and finally, how to decide when the desired result has been achieved.

Fields and Siroky (1994), describe an example of the use of two quality improvement tools used within the philosophy of CQI. Firstly, control charts to measure common and special variation and secondly, Pareto analysis to describe and rank important effects. Heckman et al. (1998), used QI tools effectively to reduce error rates in cord blood sampling.

CQI exists on various levels within healthcare. Ultimately, the success of these relies on management commitment and ability to introduce and support the initiatives. CQI also implies that there are some measurement tools in action to provide control mechanisms and proof of improvements. While technical tools may be operating, customer-focused tools are rare.

Within healthcare there are two other important stakeholder groups who are worth bringing into the QI equation;

- a. The medical staff, who are not likely to be very familiar with matters relating to quality management.
- b. The patients, who are the prime reason for the existence of the healthcare organisation. The inclusion of this latter group is difficult for healthcare organisations because of the technical nature of the service provided. Patients have difficulty in assessing the quality of technical procedures such as surgery etc.

### **2.3.2 Total Quality Management (TQM) within Healthcare**

TQM is a systems approach to quality described by many authors. It is difficult to define exactly what it means, but its popularity warrants discussion. Motwani, Sower and Brashier (1996) refer to the definition of TQM used by JACHO, which describes the need for a company-wide structured system all working together to plan and implement CQI in work systems and work processes. Swinehart and Green (1995) support the link between CQI and TQM as a means of eliminating waste, with TQM as a means to improve quality. Omachonu (1990), refers to TQM as Total Service Quality Management (TQSM), and notes that, in order to move towards this goal, there is a need to assess both the visible and invisible aspects of the service.

Zabada et al. (1998), describe a number of reasons why TQM is difficult to implement within healthcare. These include the powerful subcultures that exist within healthcare, particularly within the physician group, who measure quality mainly in terms of technical expertise within a hierarchical management structure which still resists employee empowerment.

An overriding theme is the need to move away from the 'product out' philosophy, which places the emphasis on the medical condition, to a 'market in' philosophy which places the focus on the person. This empowers people to be involved in their own medical treatment with a team philosophy regarding the quality of the service provided.

The link between CQI and TQM is important. These two should not be considered in isolation, in fact, CQI should operate within an organisation which is committed to the TQM philosophy. This requires a thorough knowledge of the tools, both technical and patient focused, for the effective application of the CQI process.

### **2.3.3 Malcolm Baldrige Quality Programme for Healthcare 1999**

The Malcolm Baldrige Quality Award has been in existence in industry for many years. This is a substantial quality management system originating in the USA that rates quality against specific criteria by obtaining numerical score from a third party auditor. The total numerical score is obtained and is compared with others applying for the award. The programme requires a significant commitment from the organisation involved.

A Baldrige programme for the health sector, commenced in 1999, for the first time. Of particular interest within the new health criteria is a *patient satisfaction* component, which accounts for approximately 20% of the overall excellence measure. It is possible that the results from this research project, if integrated into such a programme, could make up a significant portion of that component (National Institute of Standards and Technology: Malcolm Baldrige Healthcare Quality Criteria, 1999).

### **2.3.4 Quality Systems In New Zealand Healthcare**

Despite the Government's apparent lack of interest in quality management, they did signal some interest in QMS with the establishment of the New Zealand Council for Healthcare Standards (NZCHS) in the late 1990s (NZCHS, 1994). This self-funded group was established with the assistance of the RHAs, to develop two quality management systems; one for acute services and the other for disability services. These standards were modelled on the JCAHO system (NZNCS, 1994). Currently, 132 different healthcare providers, from large hospitals to small private rest homes, are voluntarily accredited against this standard. Despite the existence of a quality standard, no government directive demanding accreditation has ever been made.

Despite the apparent success of a systems approach to quality in this country, a recent contact with NZCHS suggests that quality thinking within healthcare in this country is still in a state of flux, with the emphasis still on price and volume contracting. Measurement criteria, in particular, are still focused towards these outputs and not towards quality measurement. (B. Donaldson, NZCHS, personal communication, 15 March, 1999).

### **2.3.5 Safety Standard in New Zealand**

The government has stated the intention to introduce a safety standard for healthcare organisations (MoH, 1995). This was to be introduced to provide both the customers and the funders with an assurance that safe work practices were in place. Unfortunately, this new standard appears to be in addition to the existing quality standard, rather than being amalgamated of both.

Perhaps a convergence of the two standards will see QMS in healthcare acceptable in this country sometime in the near future. Alternatively, it is feasible to see the safety standard superseding the NZCHS quality standard, because providers will be reluctant to spend the

money required for accreditation against both. The optional NZCHS may be the one dropped.

### **2.3.6 Healthcare Customers/Stakeholders**

There are a number of customer or stakeholder groups within healthcare. The preferred way to describe patients these days is as *patients* and not as *customers*-thus there has been a softening of the commercial connotation previously in vogue. Other stakeholder groups are worth considering as well.

#### **2.3.6.1 External Customers**

External customers are those who are impacted by the product (or, in our case, the service) but who are not part of the organisation (Juran & Gryna, 1988). As far as the Ministry of Health is concerned, people are the centre of the service delivery (MoH, 1995). In other words, the external customers are the patients and they should be at the centre of the service delivery.

The management of the particular hospital chosen for this research project also state, as part of their business plan, that patients are their primary customer. The impression gained during this project is that not every provider has the same view.

It is interesting, within healthcare, to reflect on how little influence the primary customers (patients) have over the provision of the service. Furthermore, few apparent attempts are made to ensure that the service meets with their negotiated expectations.

### **2.3.6.2 Internal Customers**

These are stakeholders on the inside of the organisation who are actually customers of the organisation (Juran & Gryna, 1988). Examples within the health sector would include such services as the laboratory and the X-Ray department both of which function to support the medical staff, rather than the patients directly. Normally this group would be relatively insignificant, however, because of the technical dominance that healthcare professionals have over the patients, this is not the case. The health professionals and hospital management groups can be a significant lobby group within a healthcare organisation to the extent that it is often presumed that they know what is best for the external customers. Missing from this assumption is that the internal customers should be working towards supporting the expectations of the primary customers; namely the patients.

### **2.3.6.3 Other Stakeholders**

Within healthcare there are groups other than the institutional or primary health care providers who have roles to play in the provision of the care. Examples include the Health and Disability Commissioner, whose role is to act as an advocate for patients if they consider that they have been inadequately or inappropriately treated by a hospital, the HFA, the funding organisation, whose role is to ensure that the Government's health goals are being met, and CCMAU, who monitor the HHSs on behalf of Treasury.

It could be argued that the Government is currently the customer. It does after all pay for the service, however, in placing the Government in this position, the patient is relegated to something less significant and perhaps resembles more the '*work in progress*'. A feature of this project is to change this perception and to place the patient in the position of the primary customer and from this angle, an attempt will be made to measure the quality of the service provided by the HHSs.

There are a large number of stakeholders in this very complex service. Often the patients are the least-informed of all these groups. This has led to the situation where the patient is often the least considered, which is not in line with the Government's intention of how healthcare should be provided. Clearly there needs to be a change in this attitude by considering patients' wishes and needs to a greater extent.

### 2.3.7 Healthcare Service Provision

The provision of a service has been described as:

*“ An activity ... of an intangible nature, that takes place between the customer...and systems of the service provider, which are provided as solutions to a customer's problem”.*

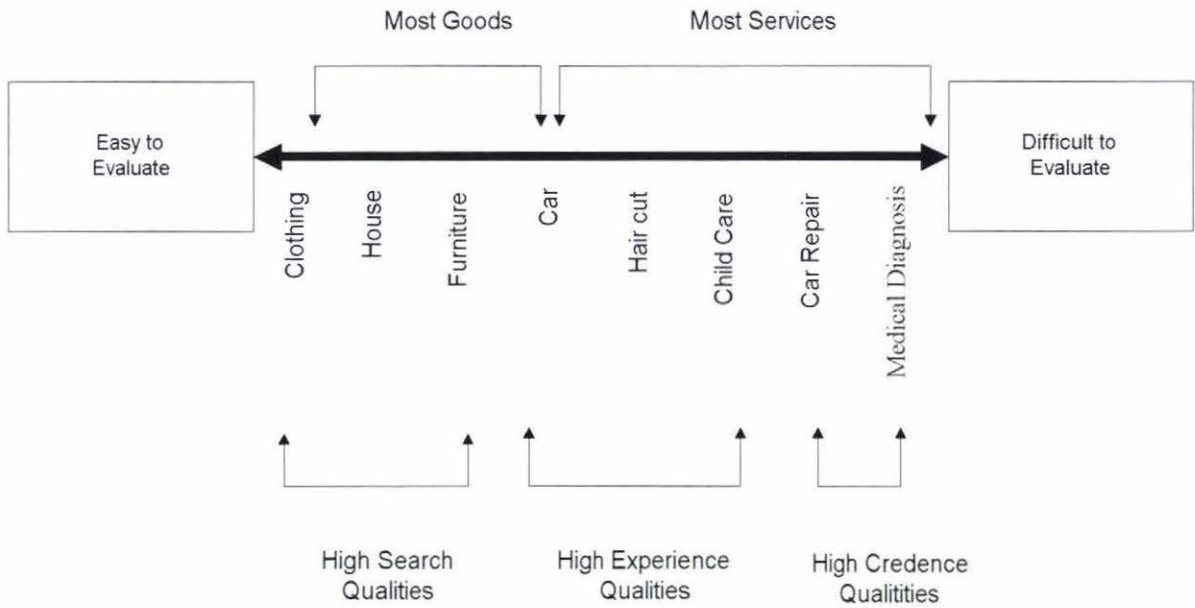
(Grönroos 1990, p.25 as cited in McIlroy, A. (1996) 26-377 Massey Study Guide (pp.23-27). Palmerston North: Massey University, Department of Business Studies).

When considering the intangible and perishable nature of services, it follows that measurement techniques used to measure service quality also need to be a little different from those traditionally used to measure quality in a production situation.

Zeithaml and Bitner (1995), who refer to service quality generally, introduce the idea of ‘*credence qualities*’ (p. 59) within services. These credence qualities dominate many services where professionals are providing a service which customers find difficult to judge because they have insufficient knowledge or experience. They are, therefore, left to trust the service provider without having a real understanding about the actual service being provided. On the continuum of credence values seen in Figure 2-1, medical diagnosis is high in this respect.



**Figure 2-1 Credence Quality Continuum**



(Adapted from Zeithaml and Bitner, 1995, p. 58)

The impact of this is that patients possibly evaluate quality differently from the way that service providers evaluate quality, and differently from the way they would evaluate quality if the dimensions were tangible and easily quantifiable, as would be the case, for those with high search qualities.

**Figure 2-2. Major Theoretical Perspective's on Quality**

<b>Dimension</b>		Lehtinen&	Gronroos	Berry et al.		
<b>Of Quality</b>		Lehtinen				
		(1982)	(1983)	(1985)		
<b>What is provided</b>	=	Physical	=	Technical	=	Outcome
		Quality		Quality		Quality
	⇓	⇓		⇓		⇓
<b>How it is provided</b>	=	Interactive	=	Functional	=	Process
		Quality		Quality		Quality
		⇓		⇓		⇓

**PERCEIVED SERVICE QUALITY**

(Walbridge and Delene, 1993, p.8)

In the review of the perspectives of quality shown in Figure 2-2, the service has also been separated into two components by a number of authors. The approach that best describes the healthcare sector separates quality into the *technical* (what was provided) and the *functional* or (how it was provided (Gronroos, 1983, cited in Walbridge and Delene, 1993). Omachonu (1990) also separated service quality into two components. Firstly, *quality in fact*, which is measured by conformance to a specification and audited by a third party. Secondly, *quality in perception* which is measured by the customers' experiences of the service quality.

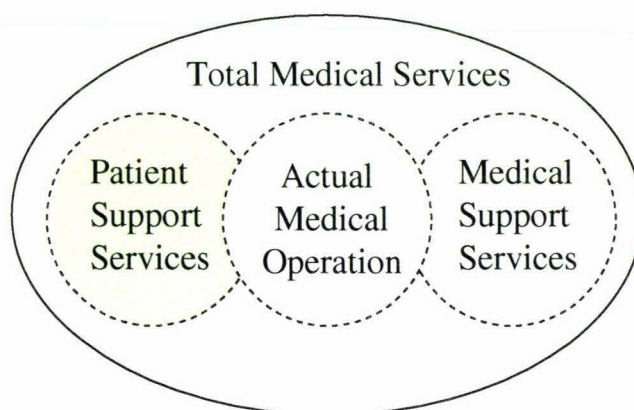
In summary, then, the intangible service which exhibits a high level of credence quality is separated into two components, one component highly technical and the other functional. The outcomes from the measurement of quality in this situation may be very different from

The outcomes from the measurement of quality in this situation may be very different from those of simple service organisations. What is being provided? To whom is it being provided and what, and how is it measured? are all questions upon which healthcare providers should continually reflect.

The position taken for this research has been that the patient is the primary customer who receives the service, and the government is still the primary funder of public healthcare, who pays for the service. The service provided is segmented into a technical aspect for which specific measurement tools exist (MoH, 1996) and a functional aspect, the measurement tools for which are encountered infrequently within healthcare, but which are similar to those used to measure service quality in other service organisations.

In this case, however, it is recognised that this tool is measuring only one aspect of the service activity, namely, the patient support services-and not the entire service as is described hypothetically in Figure 2-3 The Hypothetical Structure of Support Services. The primary goal for the research will be to assess the effectiveness of one particular service quality measurement tool, namely SERVQUAL, in measuring the functional service quality aspect, which in this case has been called the Patient Support Services component of the total health service delivery.

**Figure 2-3 The Hypothetical Structure of Support Services**



### **2.3.8 Measurement of Technical Quality within Healthcare**

Measurement of the technical processes within a hospital takes several forms. One is the measurement of the individual professional's ability to undertake the technical processes. This measurement has relied largely on the maintenance of clinical and professional standards through regulations and ethical codes by peer review from their professional organisations such as the Medical Association (Medical Practitioners Regulations, 1995) and the New Zealand Nurses Organisation (NZNO, 1993).

Clinical standards are measured using a range of traditional reporting processes such as adverse reporting (Walshe, Bennett, and Ingram, 1995). Silber et al. (1997), suggest that the use of the traditional measure of death rate is not appropriate, and that three other tools may be more useful: adjusted mortality, in patient obtained complications, and death following complication.

Another recent addition to the measurement of technical skills is ongoing proficiency testing. This new theme is currently being piloted for Medical Scientists in New Zealand by the Medical Laboratory Technologist Board (1995) and a position paper for proficiency testing of nurses has been released for comment by the Nursing Council of New Zealand (NZNC, 1996). This trend requires individual professionals to prove, to their respective professional bodies, that they have maintained a minimum level of professional competency.

Another technique for measuring technical quality is third party audit of the systems followed by accreditation against a quality standard. As described previously, JCAHO, are responsible for accreditation of hospitals in the USA. NZCHS uses a standard which is based on the one used by JCAHO to accredit hospitals in this country. NZHCS describe quality in relation to the patient care and outcomes-including the reduced probability of undesirable outcomes.

Other ancillary diagnostic departments within the health sector undergo the accreditation processes specific to their disciplines e.g. Laboratory accreditation in accordance with ISO Guide 25 which began in this country in 1977 (long before hospital accreditation was considered). More recently, pharmacy and radiography have also been included in the process, being accredited against standards specific to their professions. In 1998 almost all medical laboratories in New Zealand were voluntarily accredited against ISO Guide 25.

The mission statement from NZCHS (NZCHS, n.d.) does take into account the customer's expectation. However the gradual development of systems approaches to quality and the inclusion of customer requirements within these approaches does suggest a gradual move in the direction of service quality as seen from the customer's point of view.

The unusual aspect of the technical measurement has been the lack of input from the customer, who remains largely excluded from this component of the service. This should not negate an obligation on the part of the healthcare professionals to include the patients in decision making and then to permit the acceptance of their views. Historically, this has not been the case. The assumption has always been that the 'doctor knows best'. Projects such as this begin to question this position and perhaps it is now appropriate to include patients' much more closely in the decision-making process regarding their healthcare.

### **2.3.9 Measurement of Functional Quality**

As explained previously, functional quality relates to how the actual process or service was being provided. Although it has been recognised that functional quality and service quality are different, the tools used to measure the two are similar.

Ford, Bach and Fottler (1997), separate the measurement methods into:

- a. Qualitative: e.g. management observations, employee feed-back, quality circles and focus groups and

b. Quantitative: e.g. comment cards, patient surveys, telephone surveys and mystery shoppers.

### **2.3.9.1 Qualitative Service Quality Measurement**

An example of the qualitative approach used by Rantz, et al. (1998), utilised focus groups to develop a model for the assessment of nursing home quality and identified a number of service quality dimensions, namely; resident focus, care process, recreation activities, staff, facilities, dietary, and community ties.

### **2.3.9.2 Quantitative Service Quality Measurement**

Quantitative measurement is based largely on customer survey questionnaires. Two types of survey models are used in the healthcare sector for quantitative analysis. These include '*perception*' and '*disconfirmation*' questionnaires.

#### **2.3.9.2.1 Perception Surveys**

A perception measurement tool called "Patient Perception of Care" (p.41) was developed by Casarreal, Mills and Plant (1986). This was installed into a multi-hospital organisation in an attempt to maintain uniform quality throughout their organisation. The complete questionnaire was not presented in the literature, however, statistical analysis in the form of Coefficient Alpha calculations showed some validity for sections of it.

Another instrument was developed by Phillips, Morrison and Chae (1990), called the "QUALCARE scale" (p.77). This group examined the perception of quality from three angles: quantification, clinical relevance and establishment of standardisation of ratings. They used seven service dimensions: physical, medical, management, psychosocial, environmental, human rights, and financial. Psychometric statistics gave reliability to the

construct. However, no weighting was assigned to the quality dimensions used therefore the importance of each cannot be ascertained. The importance of standardisation was noted in this project.

Davis and Heineke (1998) examined the effect of waiting time and its effect on customer satisfaction. They showed that the perception model was more effective than the disconfirmation of the waiting time.

The deficiency with perception surveys is that they are not based on any specific predetermined position. A more complete approach would be to first assess the expectation before comparing it with the perception. An anecdotal comment received from management of a public hospital was that 'their patients always complain about the food'. But another question that needs to be asked is; On what do they base this judgement? Do they expect a five star hotel, or is it compared with the food that they would cook for themselves at home? Without this basis, quantification is invalid.

In addition, the relative importance of any position needs to be ascertained, because the level of importance would dictate the effort that the management of the hospital should place on resolving the discrepancies in service quality, and the order in which these should be resolved.

#### **2.3.9.2.2 Disconfirmation Surveys**

This is the method which has been chosen for detailed examination in this review. The advantage of disconfirmation is that it yields a result, not only for the perception or expectation of the service, but also for the difference between the two (a disconfirmation). The particular model for detailed analysis in this review is a disconfirmation model called SERVQUAL (Parasuraman, Zeithaml & Berry, 1988).

A contradictory position regarding the disconfirmation technique was presented by Hart (1997). This report was concerned with the statistical approach used to quantify qualitative information. It questions the use of disconfirmation surveys because of the difficulty in defining perceptions and expectations. It also suggests that expectation may vary over the course of the service, therefore the results are time dependent. It specifically mentions the use of waiting time (this is one of the tools used in the UK to measure quality) as a measure of quality, and suggests that a reduction in waiting time may not actually reflect improved quality but simply may be a more rapid and impersonal processing of patients.

While some of these comments may have merit, neither were they backed up with any research data, nor were alternatives presented. The disconfirmation technique discussed in detail in this review has shown promise, although the need to establish specific industry-based dimensions has been identified.

Regardless of the number of questions used, there are a number of issues regarding questionnaires that may affect the way in which respondents answer each question (Schuman and Presser, 1996). These include the wording, location, the type of scale and anchoring used. Anchoring describes the labels that are shown for the various options on the Likert scale. It is suggested that each possibility for each question should be described or alternatively the anchors should describe the options at the top of a matrix of Likert options. It is important that good question design and pre-testing are undertaken to limit these effects. These issues are discussed at length in the discussion of the results of the research.



## **2.4 SERVQUAL; The Background**

The quality measurement tool used in this project was developed by Parasuraman, Zeithaml and Berry (1985, 1988, 1990, 1994). The SERVQUAL model at Figure 2-4 is described as a series of interactions between a customer and a service provider.

Gaps in the interactions between the various stakeholders are labelled one to five. Gaps one to four exist within the service providers' organisation, whilst gap five is the difference between the customers' expectation and perception of what they receive from the service provider.

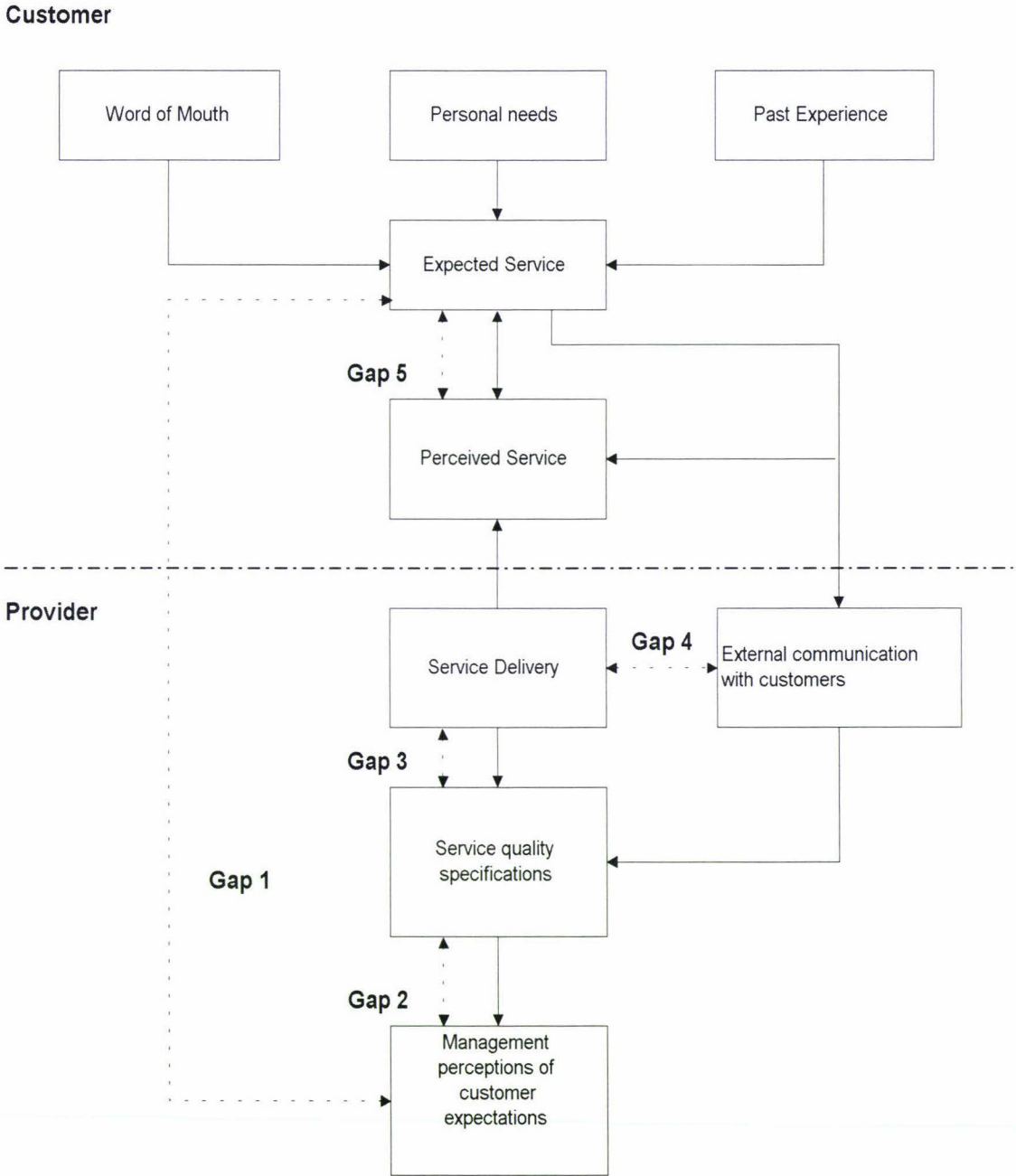
### **2.4.1 Gap 1: Customers' Expectation - Management Perception Gap**

This describes the gap between what the customers expect to get and what the management think the customers expect. There can often be a difference between the two. The gap is due largely to a lack of market research, or a lack of communication with the customers.

### **2.4.2 Gap 2: Management Perception - Service Quality Specification**

This gap can exist because the management fails to set the specifications of the service e.g. how safe or how frequent, on the assumption that they understand the customers' needs. This can be due to the management not being prepared to set the standards in order to meet the customers' expectation and can occur for a number of reasons, such as; cost, lack of resources or a strategic management plan for the organisation which focuses on fiscal gain rather than on customer service.

Figure 2-4 A Conceptual Model for Service Quality



(Parasuraman, Zeithaml and Berry, 1990, p. 46)

### **2.4.3 Gap 3: Service Quality Specification - Service Delivery Gap**

Despite a clear customer focus and the existence of quality systems, it can still be difficult to deliver a quality product or service. Many companies are unable to do so for a number of reasons including: a lack of training, unwillingness of staff and a lack of strategic planning. It is important that the management provides the necessary resources to enable the delivery of the appropriate service.

### **2.4.4 Gap 4: Service Delivery - External Communications Gap**

How well does the organisation communicate with its customers? How well does it provide what has been communicated? Both over promising and under delivering are important issues. The outcome of this is non-delivery of what is promised is a reduction in the perception of the quality of the service from the customers' point of view.

### **2.4.5 Gap 5: Customers' Expectations - Customers' Perception Gap**

This completes the cycle with the various components of the service provision giving the customers their perception of the service. A gap can occur because the expectation of the service which they have developed over time, from their previous experience, personal needs and comments from other users of the service, may vary from the perceived service.

Parasuraman et al. (1990) suggest that solving the problems associated with gaps one to four will solve the problems associated with gap five. Therefore, the overall measurement of service quality can be done by measuring gap five i.e. the difference between each customers' perceptions and expectations of the service provided. The SERVQUAL disconfirmation questionnaire referred to on many occasions in this review measures gap five.

#### **2.4.6 The Disconfirmation**

The disconfirmation is undertaken by inviting answers to perception and expectation questions over five service quality characteristics or dimensions: reliability, assurance, tangibles, empathy and responsiveness (Parasuraman et al., 1988). Their initial work identified 10 dimensions, however, these were reduced and amalgamated into a 22 item, five dimension construct. Each item comprises two questions; one a perception question and the other an expectation question. Customers are asked to assign a value on a Likert scale as to whether they agree or disagree with the comments. Service quality for each question is calculated by subtracting the expectation value from the perception value for each question in each dimension. Service Quality (SQ) = Perception (P) - Expectation (E). For each question, a negative result indicates that the service quality was not as good as expected- while a positive result indicates that the service quality exceeded expectations.

#### **2.4.7 Importance of Dimensions**

Throughout the development of SERVQUAL, the reliability dimension has been the most important for 50% of the respondents (Parasuraman et al, 1990). The validity of the dimensions was tested using the banking, credit card, repair and maintenance and toll call services in the USA. It was found that the model could be used across all those service industries.

The original model has undergone development as a consequence of several contradictory reports. Teas (1993), and Cronin and Taylor (1994), suggest that the construct is not valid from either a statistical point of view or from an application point of view. Gerhard, Boshoff and Nel (1997), suggest that there are only two factors, namely intrinsic and extrinsic. This aligns somewhat with the functional and technical aspects as described by Gronroos earlier

in Figure 2-2. Parasuraman et al. (1994) provide a reassessment supporting their original claims.

For this project probable dimensions were available from the Tome and Ng (1995) model however the relative importance was unknown. The approach with this project has been to assign an importance rating to each of the questions in the questionnaire. From there, an average importance can be established when the dimensions have been identified.

The construct may have some limitations such as the same total score is achieved for both a low expectation-perception score and a high expectation-high perception score. This aspect of the construct is acknowledged, and could perhaps be the subject of further investigation. There are also contentions regarding the number of factors derived. Generally speaking, the model does appear to be valid, provided that these limitations are realised, and provided that service dimensions and importance are established for each individual industry.

#### **2.4.8 Customer Satisfaction**

Kristensen, Martensen and Gronholdt (1999), in their review of customer satisfaction, described five different models used to explain customer satisfaction. Most of the models are based on the perception of quality. Some are slightly more complex, requiring a disconfirmation between perception and the expectation. Others are less complex being modelled on expectation alone.

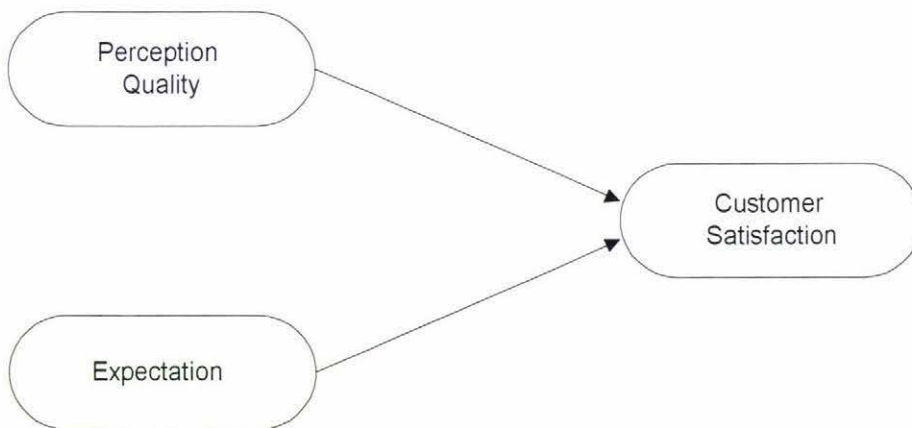
Oliver (1997) notes that SERVQUAL was not designed to measure satisfaction, rather it was designed to measure service quality. Satisfaction is a function of the fulfilment that a service provides, whereas the service quality is more encompassing and includes the underlying features of a service.

Ramaswamy (1996) also describes satisfaction in terms of the disconfirmation between the expected performance and perceived performance and states that, if a zero disconfirmation

is obtained, then satisfaction is achieved. It is possible to have a poor quality service that does provide customer satisfaction because the customers' expectations also are low.

Customer satisfaction can therefore be describe as the outcome of meeting the expectation with the perception as in Figure 2-5 i.e. if a zero disconfirmation is obtained customer satisfaction has been achieved. It is important appreciate that customer satisfaction and service quality are not the same thing. This project is not deliberately undertaking an analysis of the satisfaction aspect.

**Figure 2-5 Customer Satisfaction Model**



(Adapted from Kristensen, Martensen & Gronboldt, (1999))

#### **2.4.9 Statistical Validation**

The statistical analysis used to provide validity for the technique includes:

- a. Factor analysis which has been used by several authors to correlate previously uncorrelated data and to reduce the number of questions in each dimension (Hayes, 1992, p. 156). The analysis may show further that there are other dimensions that were not previously considered. (Nunnally, 1978, pp. 327 - 405).
- b. The Cronbach Alpha Coefficient is used by most authors assessing SERVQUAL to measure the internal consistency ratio of the sum of the individual variances to the total variance of the disconfirmation answers. The higher the coefficient the greater the reliability or internal consistency of the questions within each dimension. (Cronbach, 1990, p. 207). Reliability of the statements within the dimension is acceptable if the Coefficient Alpha exceeds 0.70 (Vandamme & Leunis, 1993). A low Cronbach Alpha indicates that one or more of the questions within the dimension should not be there. Extracting a question and then recalculating may ascertain which should not be included. (Parasuraman et al., 1988).
- c. The Factor analysis and the Cronbach alpha together provide a measure of statistical validity for the tool. Both are necessary to prove that the number dimensions and the appropriateness of the number and location of questions are correct for each dimension.

#### **2.4.10 SERVQUAL in Service Industries**

Numerous investigations have shown that SERVQUAL is effective in measuring service quality in a number of different service industries (Babakus & Mangold, 1991; Gupta, 1995; Gabbie & O'Neill, 1996; Donnelly & Shiu, 1999). The original work conducted by Parasuraman et al. (1988), showed its effectiveness in the Banking, Credit Card, Repair and Telephone Companies. The five dimensions; reliability, assurance, tangibles, empathy and

responsiveness, were valid across all the industries selected. In contrast, Carman (1990), was able to show that although the SERVQUAL model would work for several different service organisations (dental clinic, tyre store and placement centre), the dimensions needed to be modified for each industry. Cuthbert (1996a and b) used SERVQUAL to measure service quality in Higher Education. The statistical validity for the assurance dimension did not correlate with Parasuraman et al. (1990) and the factor analysis showed that there were seven, rather than five, dimensions. Crosby and LeMay (1998) used SERVQUAL in the transport industry, and suggested that it would be more effective if a price component were to be included in the importance rating, as all dimension were considered important.

The concern here is that no two studies, other than the original authors, seem to be able to replicate the same dimensions. Furthermore, few reports exist that replicate the results in the same industry, but at different locations. Clearly the generic dimensions provided by Parasuraman et al. do not suit all organisations. However, further research should be conducted to attempt to establish a baseline of dimensions for specific service industries so that the construct can have transferability from place to place within each industry. This will then provide a meaningful tool for ongoing service quality measurement.

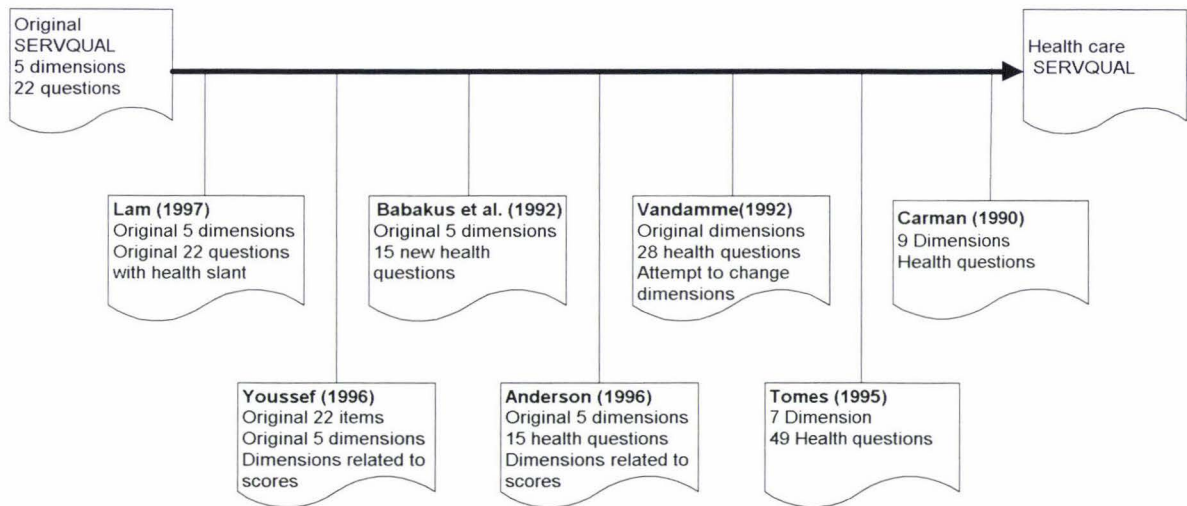


#### **2.4.11 SERVQUAL in Healthcare**

A small number of attempts to use SERVQUAL within healthcare have been undertaken, some using the original 22 question model, others with modifications. Figure 2-6 describes this development from the original model developed by Parasuraman et al. (1990), through to a notional ideal model for healthcare. Between these extremes there have been a number of attempts to reconsider both the number of questions and the number of dimensions found.

A feature of these developments is that they have not followed a strict chronological order. Recent papers used the original SERVQUAL model with apparent success (Youssef, Nel & Boviad 1996; Lam 1997). The former study is the only group found so far who included the significance of the dimensions in the calculations of the service quality. Although both noted that industry specific dimensions should be established, neither attempted to define any.

**Figure 2-6 The Chronological Development of a Healthcare based SERVQUAL Model**



Babakus and Mangold (1992), modified the original 22 item generic model down to a 15 paired health sector questionnaire. The original dimensions of service quality were maintained. This study succeeded in confirming the validity of their modification rather than attempting to test service quality specifically. Anderson and Zwelling (1996), used the Babakus model to compare service quality in five outpatient clinics. In addition to the 15 questions, the importance of the dimensions was included in the research. They also analysed the expectation and perception components of the model separately, and found significant differences in the expectation, but not in the perception, between the different clinics. This was the only study found in the literature that used the construct to compare different areas within a hospital providing similar services. No evidence of the longitudinal use of the tool within healthcare could be found in the literature.

Vandamme and Leunis (1993), had limited success in re-defining the dimensions of the construct to focus on the health sector. They suggest that tangibles, assurance and nursing staff were the important dimensions, but stopped short of re-developing the model entirely.

In an earlier project, Carmen (1990) attempted to determine the dimensions for four different service providers. In an acute hospital, he found that there are nine dimensions: admission, accommodation, food, privacy, nursing, explanation, visitor access and courtesy, discharge planning and patient accounting. This project had modified the original model to a similar degree to that of the Tomes and Ng (1995) modification, but unfortunately, details of the questionnaire were not provided in the literature, so it could not be used as a baseline for this project.

The conclusion from this is that SERVQUAL is a useful tool for measuring service quality within health care, provided that the original construct is modified to suit the situation. Subsequent quality dimensions identified are likely to be different from the original construct as well. No generic or well-proven healthcare modification could be found in the literature. Nor could an evaluation of the use of the tool for the longitudinal measurement of service quality be found.

#### **2.4.12 Tomes, A. and Ng, S. (1995) SERVQUAL Modification**

This modification of the original construct was developed in the in-patient medical wards in an NHS hospital in England. Seven dimensions, namely: empathy, relationship of mutual respect, dignity, understanding of illness, religious needs, food, and the physical environment were established from focus groups which were comprised of management, nursing staff and patients. A 49 question statement with a seven point Likert scale was adopted.

Generally the outcomes of the Tomes and Ng research were favourable, with both high average expectation scores (mean 5.06 - 6.42) and perception scores (5.55 - 6.33). They found twenty positive gap scores which indicate that the expectation was exceeded in these cases. Two zero scores indicated that expectation was equalled in these cases. The noteworthy areas of under-provision included; communication with doctors, doctors should spend more time with them and doctors should make an effort to explain things in layman's language.

The factor analysis yielded seven factors. Five were intangible, namely: empathy, relationship of mutual respect, dignity, understanding of their illness and religious needs. Two factors were tangible, namely: food and physical environment.

One feature lacking in the Tomes and Ng model was an importance rating. This was excluded to avoid emphasis on any particular aspect of the functional quality. Given that the intention of their research was merely to design and validate the measurement tool, this was satisfactory. However, a ranking of the various dimensions would have facilitated an order of preference for ongoing quality improvement.

This research project has included the importance ranking for this very reason. The inclusion of an importance rating also sped up the research process because there was no need to initially define the dimensions before their importance was ascertained, it all happened during the same phase of the project.

## **2.5 Summation of Literature Search**

The healthcare sector has undergone rapid change over the last two decades. This has not always been focused on the customer, nor on quality, but rather on short term fiscal goals and rationing of care. However, whilst rationing has remained, the commercial approach has been softened somewhat recently.

As for compliance with the wishes of the Minister of Health - who recently described one of the goals of our healthcare systems as “placing people at the centre of the service delivery” (MoH, 1995, p. 9), no clear strategy appears to exist for ascertaining from patients whether or not this goal is being achieved. It is certainly not obvious that the primary customers are in fact considered to be the patients.

The Ministry of Health itself has no clear approach towards patient focus, (with the exception of the development of the Office of the Health and Disabilities Commissioner). The continuous flow of reports in the news media from patients who have received inappropriate or inadequate care from our public health system would suggest that neither the care nor the technically focused quality management systems currently being used are effective.

Complicating this situation is the highly complex and technical nature of the service itself, which makes it difficult for patients to be included in any quality debate because they are unaware, in most instances, of the technical aspects of their treatment. Quality measurement has been conducted from either a clinical basis or qualitatively by maintenance of standards as determined by professional bodies, government regulation or accreditation agencies. Again, this process has failed to recognise the need to deliver and measure quality service from the customer’s point of view. Very few useful validated measurement tools exist for this purpose.

Both TQM and CQI are alive, but not necessarily well, in the healthcare sector. The reasons for this are a combination of a lack of training, understanding and commitment and also the alienation of stakeholder groups e.g. doctors, within the organisation. It is also, again, a reflection of the complexity of the organisations, and the lack of focus on the primary customer. Until hospitals are one team with an identifiable customer group that is trained and focused in quality improvement processes, TQM and CQI will continue to have only limited success.

The measurement of service quality from the customers' point of view, using quantitative techniques, has been primarily focused on perception surveys which, by themselves, are of limited use because the results are not calculated relative to any reference.

Some attempts have been made to use the disconfirmation model called SERVQUAL, with modifications. This model appears to have some application within healthcare for the measurement of service quality-provided that health-specific questions and dimensions are ascertained. No research could be found that has developed a definitive list of dimensions for the healthcare sector. Very little duplication of previous modifications has been undertaken. It is therefore difficult to say, at this stage, that this tool has any ongoing application within the healthcare sector. No evidence could be found of the application of this tool within the healthcare sector in New Zealand.

### **3. THE RESEARCH QUESTION**

#### **Problem Statement: Customer Based Service Quality Measurement; Is SERVQUAL the Answer?**

Over the last 20 years, the public healthcare system in this country has undergone a significant change to the way it operates. This has happened as a consequence of a number of constraints namely; patient expectation, limited funds, technological developments and our aging population. Throughout this reform process, the Government have contended that they will continue to provide public healthcare, and that the patient will be at the centre of the service delivery process.

Despite this, the patients have been largely excluded from the provider, supplier service equation and, as a consequence, they have been excluded from the data gathering on service quality. This is largely because the highly complex and technical nature of the service has resulted in quality being measured in technical terms only. Even the technical measurement of quality is limited to only a few medical departments and as discussed previously these departments are not immune from making critical mistakes which effect patient care.

In 1995, the Government signalled a re-focus on the patient, by specifying that people are to be the centre of service delivery-but still very little patient-derived quality information is collected, detailing the quality of the service from their point of view.

This project will attempt to ascertain the value of a modified SERVQUAL questionnaire, as a tool to measure the patient component of service quality within a public hospital.

## **4. RESEARCH METHODOLOGY**

### **4.1 Development of the Questionnaire**

From the literature search, it was apparent that most researchers began this type of research by conducting several focus groups with customers, then developed their survey and from the information obtained (Vavra, 1997).

For this project, the approach has been to take pre-existing questions from focus group work conducted by Tomes and Ng (1995). Additional questions were included to cover ethnic concerns (Q4 and Q30). The hospital management were given the questionnaire for comment. No further modifications were considered necessary. The result was the two-part questionnaire at Appendix 1 and Appendix 2, which consisted of fifty-one questions. Part One examines the expectation of the service provided, and Part Two examines the perception of what was received.

The supporting documentation at Appendix 3 includes:

- a. An information sheet sent out with Part One that explained the details of the research and the people involved.
- b. The Part Two information sheet explained the need for the respondent to complete and return Part Two of the questionnaire so that the complete picture of expectation and perception could be included in the statistical analysis. Both parts were necessary for the disconfirmation analysis.
- c. A reminder sheet for those who failed to return Part Two of the questionnaire which was sent out, if required, with a second Part Two.
- d. Demographic information such as age, ethnic identity and time spent in hospital was also requested. The time spent in hospital is significant because the day-stay patients (patients



held for less than one day) may have different views than those who spent more than one day in hospital.

#### **4.2 Part One of the Questionnaire; The Expectation**

The expectation part of the questionnaire was sent out by mail to patients prior to admission to the hospital. The questions ask for a response using a seven-point Likert scale. A one response implied that they strongly disagreed with the statement, and a seven implied that they strongly agreed with each statement. Question one reads “ *My doctors should explain the reasons for the tests and procedures which are carried out on me*”. This section was sent back to the hospital by mail and identified so that it could be matched with Part Two later.

#### **4.3 Part One of the Questionnaire; The Importance**

In the original SERVQUAL model the importance of the various dimensions of service quality are established by asking the respondent to rank the dimensions by placement of a percentage score for each (Parasuraman et al, 1990). To do this, the dimensions would have to be known from the beginning which would have required preliminary data collection to ascertain the dimensions.

The approach taken with this research was slightly different. We asked for an importance response for each question in Part One of the survey. We therefore developed both the dimensions and the importance rating for each question at the same time. The hospital involved also considered it essential to include the importance rating so that the project results could be prioritised in accordance with the importance rating.

#### **4.4 Part Two of the Questionnaire; The Perception.**

The hospital staff sent out Part Two of the survey when each patient had been discharged from hospital. This had the same number of questions as Part One but the wording for each question changed slightly to determine the perceived experience at the hospital. e.g. for question one of Part Two it read “*My doctors did explain the reasons for the tests and procedures which were carried out on me*”. Part Two was collated with Part One for each respondent for later statistical analysis.

#### **4.5 Selection of the Focus Organisation**

This proved to be more difficult than was first anticipated. The first approach was made to a large public hospital who found no value in this type of data collection because “they were already doing enough of this quality stuff and in any case we already know what issues concern our patients”. Without an in depth analysis of the processes they undertake it was not possible to comment further.

Their lack of interest did raise the point that there may already be quality management tools in use to measure customer satisfaction or service quality. In addition, there was the realisation that not everyone has the same level of enthusiasm as the researcher for this service quality measurement tool.

The second patient group chosen was from a private hospital. The management showed positive support for the project in the first instance but, when it finally came to the detail, they did not want to “upset the doctors”. This raised another question regarding patients in a private hospital. Who are the customers in a private hospital? Are they the patients or are they the doctors? Or are they both customers? A private hospital admission seems to be an unwritten contract between the hospital and the doctor, leaving the patient merely as work in progress. This relationship warrants further research, because the funders of private

health, be they insurance companies or private individuals may not entirely agree with this situation. Jun, Peterson and Zsidisin (1998), identified differences in quality dimensions in the different stakeholder groups namely; management, medical staff and patients, by using focus groups from each customer group. The significance of this is that all groups are going to have different expectations of service quality.

The third patient group, the one finally used for the research, came from a smaller provincial public hospital whose staff identify the patient as their primary customer in their business plan. This research project was seen as being very useful in filling a gap in their business plan. They were very keen to find out what their patients had to say about the delivery of the service. They expected that not every answer would be positive, however, these were all seen as opportunities for quality improvement.

A personal communication with NZHIS, in Wellington, did indicate that this research may fill a significant gap regarding customer health information identified in the Government's strategy for the year 2000. (V. Stevanovic, personal communication, 4 March 1999). Currently, most of the information collected by this group is clinical or critical event data.

The unexpected delays in identifying a suitable customer group delayed the commencement of the research project by some six months. In hindsight, having a really good idea and trying to convince others that it should be used was an ineffective approach in this case. An approach directly to a government agency in Wellington may have been a better approach than to contact service providers directly but the difficulty with this was in identifying the appropriate government agency.

This research was not intended as an in-depth analysis of the various Quality Assurance or Improvement techniques currently in use, nor was it meant to be an in-depth analysis of customer relations within service industries. There does, however, seem to be an

opportunity to examine the complexities of service delivery within the various health provider groups within the healthcare sector.

The cliché ‘ know who your customers are’ is increasingly blurred within the health sector because there are so many groups involved, all with different interests. A complex example of this currently is where the HFA is funding a HHS to conduct surgery on a patient but the HHS subcontracts the work out to a private hospital which may or may not be operated by a private insurance company. The medical staff at the private hospital may be operating as private businesses. It is no wonder then that various organisations have not wished to be involved in this project because they see some stakeholder groups as being more important than others. What is disturbing is that some may see various stakeholder groups as being more important than the patients. This unfortunate trend will assign the patient to be merely “work in progress” or a commodity to be bought and sold.

#### **4.6 Ethics Approval**

Ethics approval for the research process and material used was sought from two different Ethics Committees; namely the Massey University Human Ethics Committee and the Manawatu/Whanganui Ethics Committee as seen in Appendix 4.

Ethics approval has been granted on the basis of:

- a. Informed consent. This is indicated in the questionnaire itself.
- b. Confidentiality. Significant effort in the design of the project prevents the researcher from knowing the respondents.
- c. Minimisation of harm. Not an issue with this type of project.
- d. Truthfulness. The construction of some statements was reviewed to ensure that the project complied with this aspect.

- e. Social sensitivity (such as cultural and religious aspects) and
- f. Legislative relevance.

(Massey University, n.d.).

Much of this was explained on the patient information sheet, in Appendix 3.

#### **4.7 Type of Sampling Technique**

Vavra (1997), describes one sampling option as a “census of the population” (p.,66). This research has undertaken a census of the population of elective surgical patients over a seven month period. The length of time was dependent on the time taken to obtain a sample size sufficient to ensure reliability of the statistics. For factor analysis, it has been suggested that the sample size needs to be three times the number of questions in the questionnaire (Nunnally, 1978). We were, therefore, after a sample size of approximately 100 - 150 completed accurate patient responses.

#### **4.8 Pre-Testing**

The importance of the various types of pre-testing of questionnaires was described by Vavra (1997). It was considered important to ensure not only that pre-testing would be conducted amongst a knowledgeable group such as university colleagues, but also that a portion of the sample group would be given an opportunity to be involved in the pre-testing as well. The pre-testing undertaken was as follows;

- a. Researcher Pre-Testing. This was done by making the questionnaire available to numerous colleagues who were invited to complete the questionnaire and comment. This revealed several errors, both spelling and grammatical, which had not previously been found.

- b. Customer Undeclared Pre-Testing. The questionnaire was administered to the first 20 patients and their responses monitored. Minimal comments were made resulting in few changes to the questionnaire.

#### **4.9 Conduct Survey**

The pre-tested questionnaire was given to all the elective surgical patients over a seven month period, at a provincial public hospital.

#### **4.10 Missing Data**

This refers to the situation where respondents fail to fill in some aspects of the questionnaire. Three different mechanisms for dealing with missing data are described by Anderson et al. (1983, cited in Vavra, 1997):

- a. One is to delete the cases with the missing data. This may require deleting individual patient questions, entire patient questionnaires or specific questions if there are insufficient responses across the entire survey. The position that was taken for this study was to delete entire patients from the survey if they failed to answer up to 25% of the questions.
- b. The second technique was to replace the nil answers with neutral values. Either the insertion of the mean answer for each question across the entire survey can be used or alternatively the mean answer for each individual the patient across the questionnaire can be inserted. The technique chosen for this study was to use the individual patient mean, across their questionnaire, for those who answered more that 75% but less than 100% of the survey. It was considered that this mean would better represent the answering tendencies for these individuals than the former option.

c. The third option describes the use of regression analysis to statistically model the relationships of surrounding data. This requires finding patients who had answered in a similar manner and calculating the statistical relationship. This complex option was not preferred.

Singh and Sedransk (1978), also suggest separating the data into stratum; those that are complete and those that are not complete. The 'Day Stay' subgroup need to be treated in this manner because they are not exposed to all aspects of the service and therefore are unable to answer some questions.

#### 4.11 Response Rates

The response rate has been calculated using the formula in Figure 4-1.

The ineligible and unreachable include:

- a. Ineligible ( In this case less than 15 years of age or those incapable because of illness or incapacity),
- b. Unreachable,
  1. No forwarding address for the survey, and
  2. Those who did not wish to take part.

#### Figure 4-1 Response Rate Calculation

$$\text{Response Rate} = \frac{\text{Number Returned}}{\text{Number in Sample} - (\text{Ineligible} + \text{Unreachable})} \times 100$$

(de Vaus, 1995, p. 107)

#### 4.12 Statistical Analysis

This was conducted using Microsoft Excel in the first instance to tabulate the responses, and then Minitab to conduct the detailed statistical analysis. The statistical analysis was to involve: factor analysis, with rotation, to provide construct validity (Nunnally, 1978), followed by descriptive statistics.

#### 4.13 Likert Scales

Although Hayes (1992) points out that reliability levels do not improve when the magnitude of the Likert scale exceeds five, Vavra (1997) notes that scales with five or more response positions generate approximately normally distributed data and therefore are more applicable to the use of parametric statistics. Dutka (1993) notes that precision will not



increase with a higher scale if the respondents do not have the ability to distinguish between these and a smaller scale-i.e. they can not tell the difference between the steps in a scale of five or the steps in a scale of seven. De Vaus (1995) described the type of format used here as a ‘Semantic Differential Format’ (p. 88) which uses adjectives to describe and anchor extremes of the scale-one at each end, i.e. in this case *agree* and *disagree* or *important* and *not important*.

Given the variances in opinion, the seven-point Likert Scale was, used in the same manner as both in the original SERVQUAL model (Parasuraman et al 1988) and in the Tomes and Ng (1995) modification, but it is recognised that this may not produce any better results than a format using a five-point scale.

#### **4.14 Open Ended Comments**

The open ended comments from the last section of the questionnaire were categorised and have been presented verbatim. The need for the option of the open ended comments is a well recognised feature of questionnaire design. In this instance they have given the respondents an opportunity to expound in areas where only the Likert scale was provided, and also to add comments in other areas that were not mentioned in the survey.

#### **4.15 Methodology Summary**

The approach for the research has been to use a pre existing two part questionnaire which has had two additional questions added to cover the ethnic considerations of our sample frame. Open ended responses are also being canvassed to identify issues not identified by the SERVQUAL component. A demographic section has also been included to permit respondent separation by; age, ethnic or gender differences as they become apparent.

## 5. RESEARCH RESULTS

The results section firstly describes issues relating to the response rate and questionnaire, followed by the SERVQUAL results by dimension, and finally the results by demographic grouping.

### 5.1 Response Rates

$$\text{Response Rate} = \frac{83}{343 - (34 + 2)} \times 100 = 27.3 \%$$

Given that ;

The number returned = 83

The number in the sample = 343

The number ineligible = 34

The number Unreachable = 2

Response rates for various types of survey were described by Hox and de Leeuw (1994; cited in Lyberg and Biemer et al. 1997), as: face to face (70%), Telephone (67%) and mail surveys (61%). Gerhard et al. (1997), used a mail survey to test the SERVQUAL instrument and had a response rate as low as 30%. Our response rate was in keeping with these findings. Despite the low response rate, the authors noted that the responses were of better quality in the mail surveys, than other approaches. One way of improving the response rate is to provide incentives, however the ethics regarding inducements and incentives complicates the design process, so none were offered in our survey (Vavra, 1997).

The response rate is a particular problem with this two part survey because the problem accumulates from Part One to Part Two of the survey. This accounts for most of the ineligible responses, which were completed Part One but with no Part Two. The action taken to minimise this was to send out a second Part Two questionnaire to those who failed to reply to part two initially. This is an accepted limitation and merely required a longer period to achieve an acceptable sample size. There may have been some value in sending out a repeat Part One as well as the repeat Part Two, although this was not undertaken. Their non-reply to Part One was also the mechanism used by patients to indicate that they did not wish to be involved.

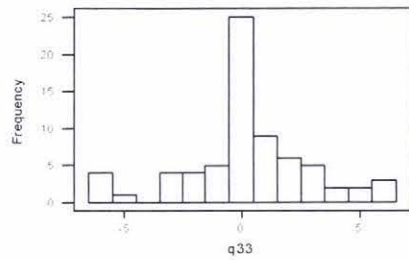
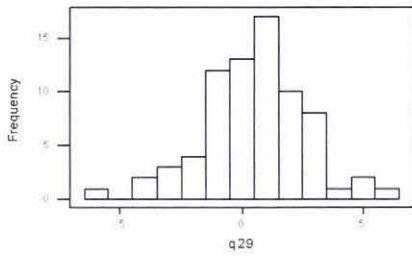
## **5.2 Inter-Quartile Range as a Measure of Spread from the Mean**

The Inter-Quartile Range (IQR) was used, as a measurement of spread from the mean, instead of the Standard Deviation, because the latter was too sensitive for the small number of ordinal data points on the scale used for the project. The greater the IQR, the greater the spread of values and the less reliable is the mean as a summary of the entire sample frame for that individual question.

Figure 5-1 shows those questions where the spread of the SERVQUAL differences between the before and after questions was the largest i.e. where they had large IQRs. Five questions had reasonably wide inter-quartile spreads, namely questions 29, 33, 34, 45, and 51 each with IQRs of three. None of these plots were considered to be so spread that the mean could not be used as an acceptable summary of the data, for each question. Question 51 is perhaps beginning to show a tendency towards two populations although the mean has still been used.

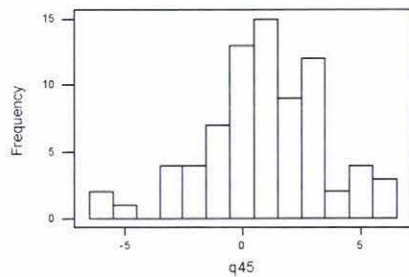
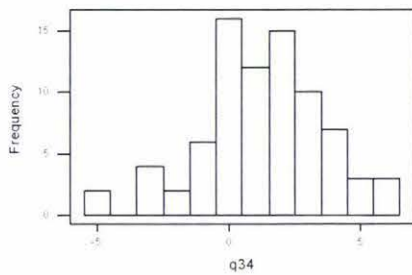
No obvious commonality exists amongst the questions with large IQRs and thus no obvious explanation could be suggested for the larger Inter-Quartile Ranges.

**Figure 5-1. Gap Scores where Inter-Quartile Range was Three or Greater**



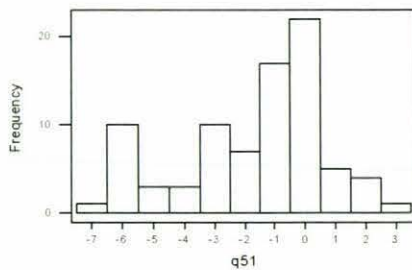
On arrival in the ward the doctor should attend to me quickly

I should be given the food that I have ordered



The nurses should spend time talking to me when ever they can

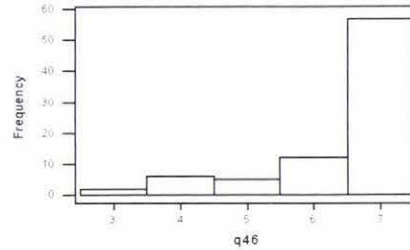
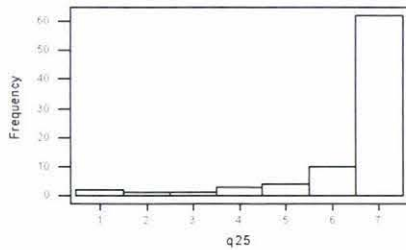
The ward should be kept well decorated



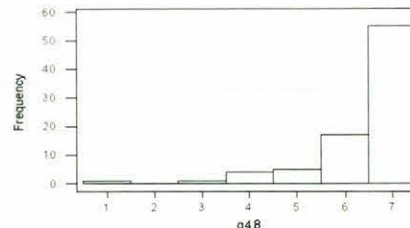
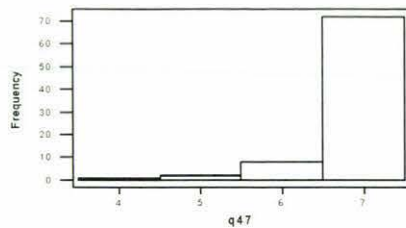
The beds pillows and mattresses should be comfortable.

There were four questions which had IQRs of zero, indicating that most of the SERVQUAL differences for these questions were in the same region. This means that frequently, the before and after questions had exactly the same value. Figure 5-2 shows that in all of these cases, the majority of the before responses were in the seven region. This implies that the patients expected excellent service and in all cases, received excellent service for these specific questions. There would have been a concern if these responses had been grouped towards the lower region of the histogram i.e. that they expected inadequate service and they received inadequate service. Fortunately, this was not evident.

**Figure 5-2 Before Responses for Questions with Zero Inter-Quartile Ranges.**



The screens should always be drawn around My doctors should treat me with respect  
 my bed when ever medical procedures and  
 examinations are carried out on me

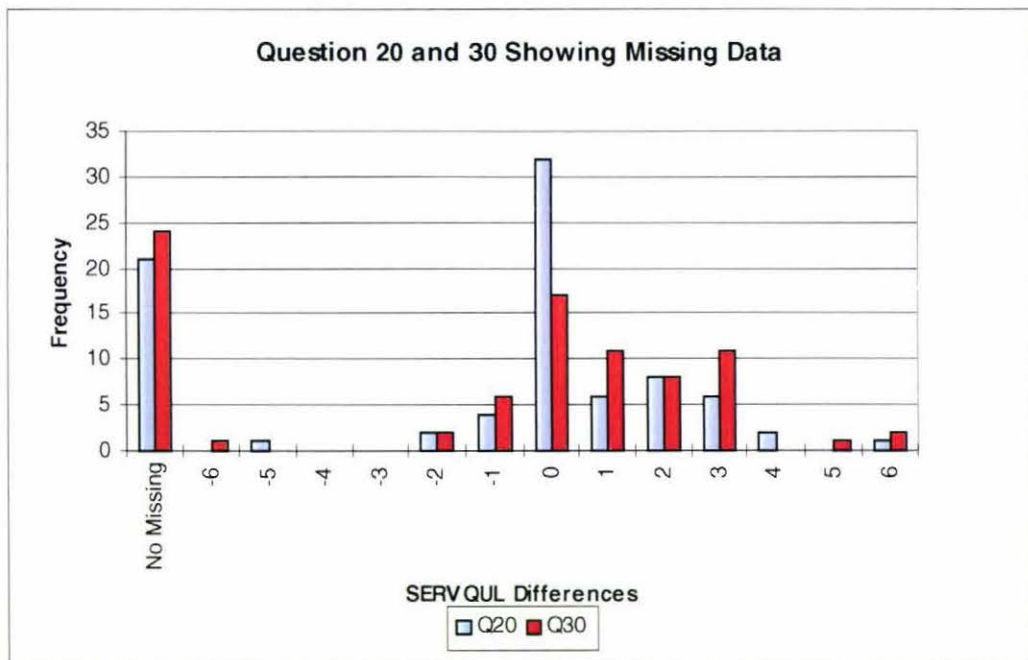


I should be able to place complete trust in Doctors should be courteous when speaking  
 my doctor to me or my family

### 5.3 Missing Data

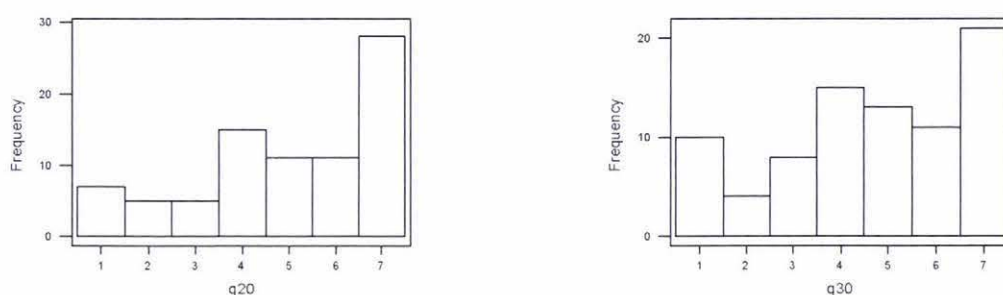
Over the entire sample frame, two questions had high numbers of no replies, namely, question 20 'I should have access to religious support of my choice whilst in hospital' and question 30 'The doctors should be familiar with cultural aspects when treating me'. A summary of the spread of the SERVQUAL differences for these two questions is shown in Figure 5-3.

**Figure 5-3 Questions 20 and 30 Showing the Missing Data**



As well as the missing data, both questions show a number of difference results in the zero region. It is necessary again, to examine the before or the after results separately to identify the range of responses between; one before and one after, and seven before and seven after. The extent of the missing data from these two questions does not impact on further analysis other than in the religious and cultural dimensions.

**Figure 5-4 Distribution of Before Scores for Question 20 and 30**



From both Figures 5-3 and 5-4, question 20 showed a significant number of respondents who felt unable or unwilling to reply to the question, while at the opposite end of the spectrum, another significant group strongly agreed with the question by replying with a seven i.e. that they strongly agree with the question. This suggest divergent views on the topic from within the sample frame. One group considers religious aspects important while the other group is not bothered. Both groups are approximately the same size.

For question 30, which was one of the cultural questions, the pattern of responses to the before question was not so obvious with a spread of results from one to seven. Given this spread, it is not so easy to make a conclusion about this response other than to say from the missing data responses, a number of respondents felt compelled not to respond to the question but for those who did respond no clear pattern emerged.

Correspondence analysis may have been useful tool to explore the relationships between the before and after data sets for these two questions, had the data sets been larger.

#### 5.4 Question Order Effects

Schuman and Presser (1996), suggest that apart from sampling errors, question order effects are the most common reason for unexpected or un-reproducible questionnaire results. A question order effect is:

*“The impact of preceding parts of the questionnaire. What looks to be a response to a question, form or content may in fact be due to question order”*

(Schuman and Presser, 1996, p 23).

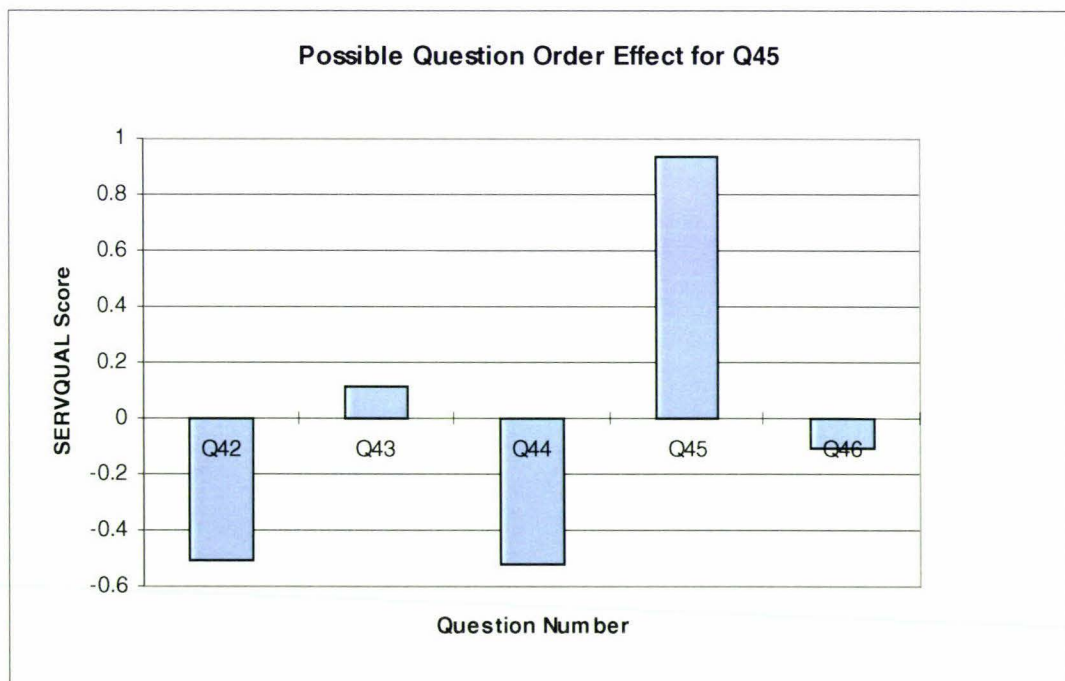
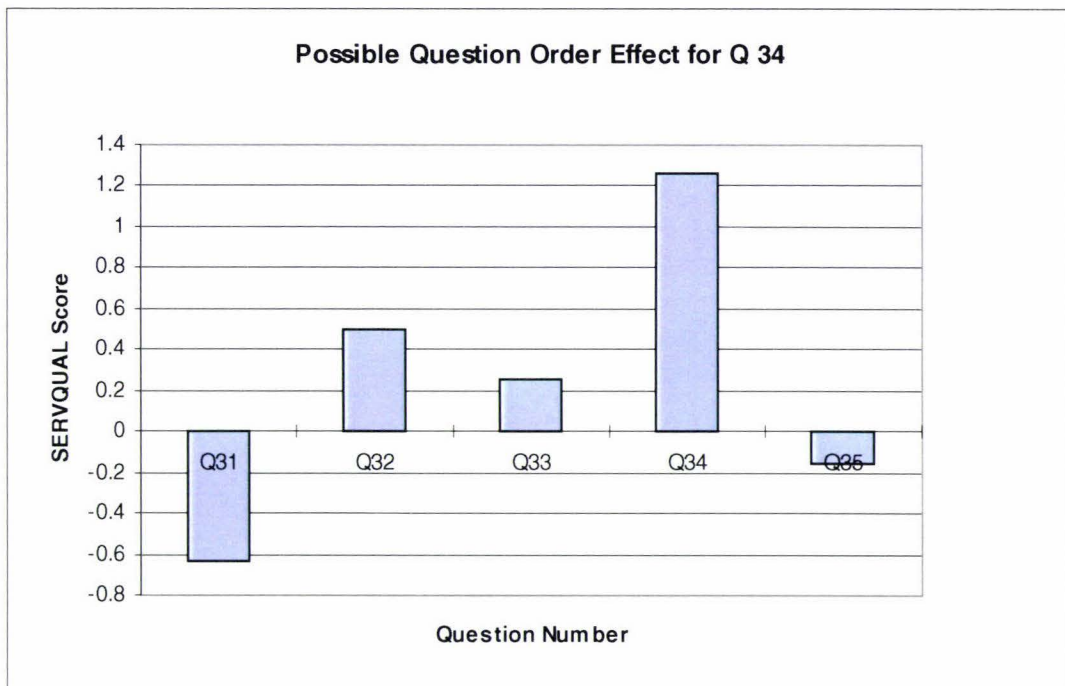
Wanke and Schwarz (1997), note that question order effects can have either a positive or negative effect on a subsequent question. To avoid this they recommend that the questions should be randomly placed within the construct, in an attempt to reduce the effect.

Two question responses, in this project, seem to be out of character with others from the same service quality dimension namely; question 34 ‘*The nurses should spend time talking to me when ever they can*’, question 45 ‘*The ward should be kept well decorated*’. Figure 5-5 are plots of both of the unusual responses with surrounding questions plotted at the same time. It is evident for the pattern of responses that the two unusual responses do not appear to be affected by those question around them. The idea that they are due to question order effects is therefore dismissed. To be absolutely sure, however, the location of these questions should be altered in subsequent surveys.

The extent to which other question order effects still exist is unknown. At issue would be those questions which do not stand out from those around them. This would be difficult to prove without embarking on an extensive experiment with the construct by randomly changing the sequence of the questions for each individual respondent. This was impractical in this case although not impossible if the questionnaire it to be used in subsequent improvement projects.



Figure 5-5 Possible Question Order Effects



A statistical approach, beyond the scope of this project, that may have been useful would be to examine the relationships between the various questions using a correlation matrix. There may be correlations that become evident using such a technique that have not shown up using the bar charts.

## 5.5 Response Order Effects

A Response Order Effect is one where:

*“with closed questions...with two or more alternatives to choose from...the order in which the alternatives are read influences the choice”*

(Schuman and Presser, 1996, p. 56).

The effect could see the placement of a mark on the Likert scale not because the respondent agrees with that position but because they like placing all the marks in a particular location on the scale. Some for example, may be reluctant to use the extremes of the scale, so they place all their responses in the middle.

This potential effect is even more difficult to detect than the question order effect, however, the disconfirmation model used may alleviate the problem, to some extent, because the respondent should answer in their unusual manner on both parts of the survey, but the gap between the two may remain the same.

Several questions need to be reworded to improve the response rate and clarity and to avoid any potential response effect.

Question 19 *‘I should be treated with dignity and be given privacy’* may have a counterargument and therefore two meanings. This should be split into two questions.

Question 45 *‘The ward should be kept well decorated’* The response to this question is out of character with other questions from the same dimension and may mean that the question wording means different things to different people. By changing the word ‘decorated’, it may be possible to achieve a different effect from this question

Question 51 *‘The beds, pillows and mattresses should be comfortable’* is actually asking for a comment on three specific items. The responses may reflection impression of only one of these three items. Additionally quality improvement of only one of the items may not be reflected in an improved score if reference to it remains within the question as written.

## **5.6 Scale Anchoring**

Scale anchoring refers to the number of descriptive labels that are attached to the Likert scales. Vavra (1997) cites problems of multi-dimensionality if many anchor points are used. We used only two with our 7 point scale, one at each end of the scale, namely strongly disagree, strongly agree or very important and not important.

A further recommendation which was employed with this questionnaire was to have the questions in a 'Matrix Question Grid' so that the responses obtained are not biased by the positioning of the anchors. In this case there was only description of the anchor at the top of each new page of the questionnaire. The respondents therefore should not have been effected by the anchors.

## 5.7 The SERVQUAL Results

The SERVQUAL results were separated into the dimensions described by Tomes and Ng. The bar graph for each question shows the SERVQUAL score and the line graph superimposed on top with a different scale, shows the Importance rating for each question. It is important to appreciate that the SERVQUAL score is a disconfirmation i.e. it is the difference between perception - expectation. Therefore the mean across the entire sample frame for each question is not likely to be large. A SERVQUAL score outside the range minus 0.5 to plus 0.5 is considered to be large. The result for question 51 for example is a large gap (Gap score -1.67). A result above zero indicate that the patients expectations have been exceeded. Conversely, if the result is negative, their expectation has not been met. Any question with no apparent SERVQUAL bar has a mean result that has been rounded to zero.

The importance score is simply a mean over the sample frame for each individual question. This mean importance can therefore be anywhere between 0 and 7. These results are plotted, along with the SERVQUAL scores, as a line graph for each question by dimension, from the most important dimension to the least important dimensions.

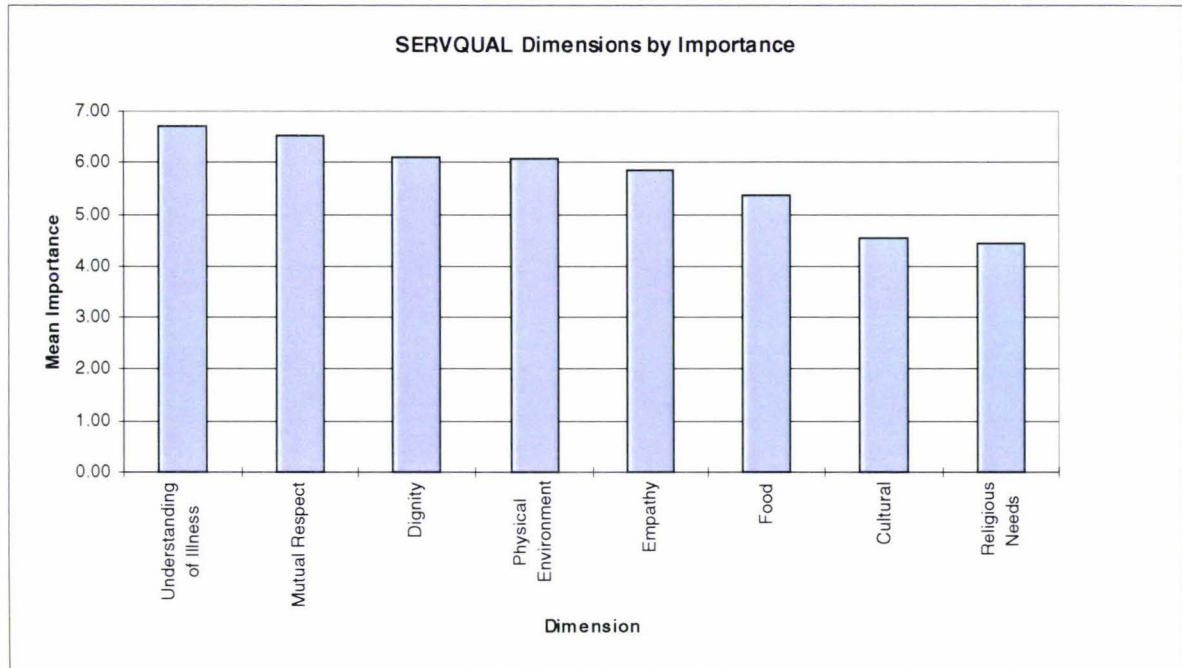
The mean importance over each dimension has been presented in Figure 5-6, ranked in order from the most important to the least important.

Weighted mean scores were calculated by multiplying the mean SERVQUAL score for each question, by the mean importance for each question and then ranked by weighted mean values.

### 5.7.1 Service Quality Dimensions Ranked by Importance

A ranking of the mean importance of each of the service quality dimensions, from the most important to the least important, are shown in Figure 5-6.

**Figure 5-6 Mean of Dimensions Ranked in Descending Order of Importance**

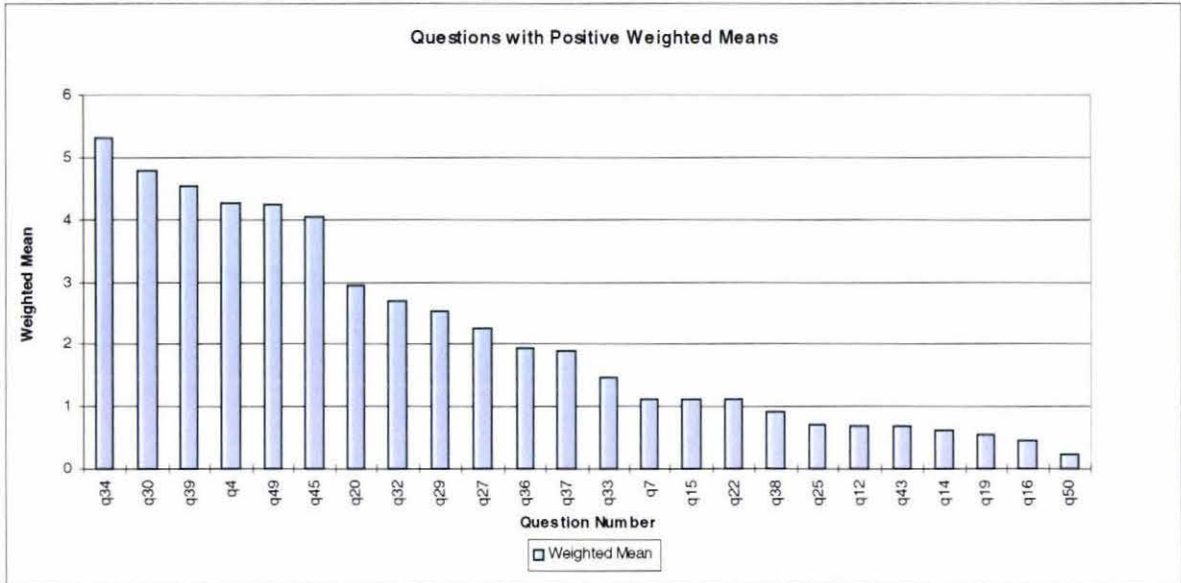


Understanding of Illness and Mutual Respect stand out as the two most important dimensions. Food surprisingly has a relatively low Importance rating.

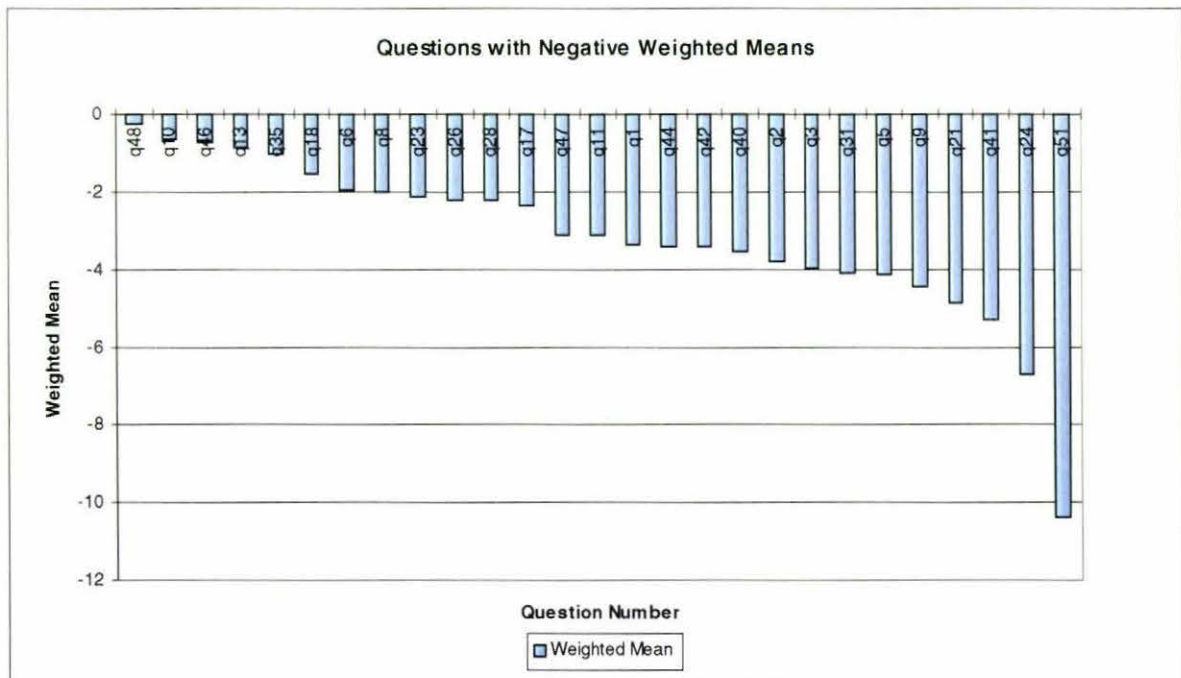
### 5.7.2 Weighted Mean Scores

Weighted Means were calculated by multiplying the Mean SERVQUAL Gap for each question, by the Mean Importance score for each question. These were then ranked from highest to lowest and plotted as seen in Figure 5-7 and Figure 5-8.

**Figure 5-7 Weighted Mean for Questions with Positive Scores**



**Figure 5-8 Weighted Mean for Questions with Negative Scores**



The specific questions that require consideration are those with large weighted means, both positive and negative. They either imply that the hospital exceeded expectation in areas that patients considered important, such as questions 34, 30, 39, 4, 49, and 45, as seen in Figure 5-7; or alternatively they imply that the hospital did not exceed expectation for questions that were considered important, such as questions 51, 24, 41, 21, 9, 31, 3, and 2, as seen in Figure 5-8. Between these two extremes the expectation was generally met however the importance rating decreased.

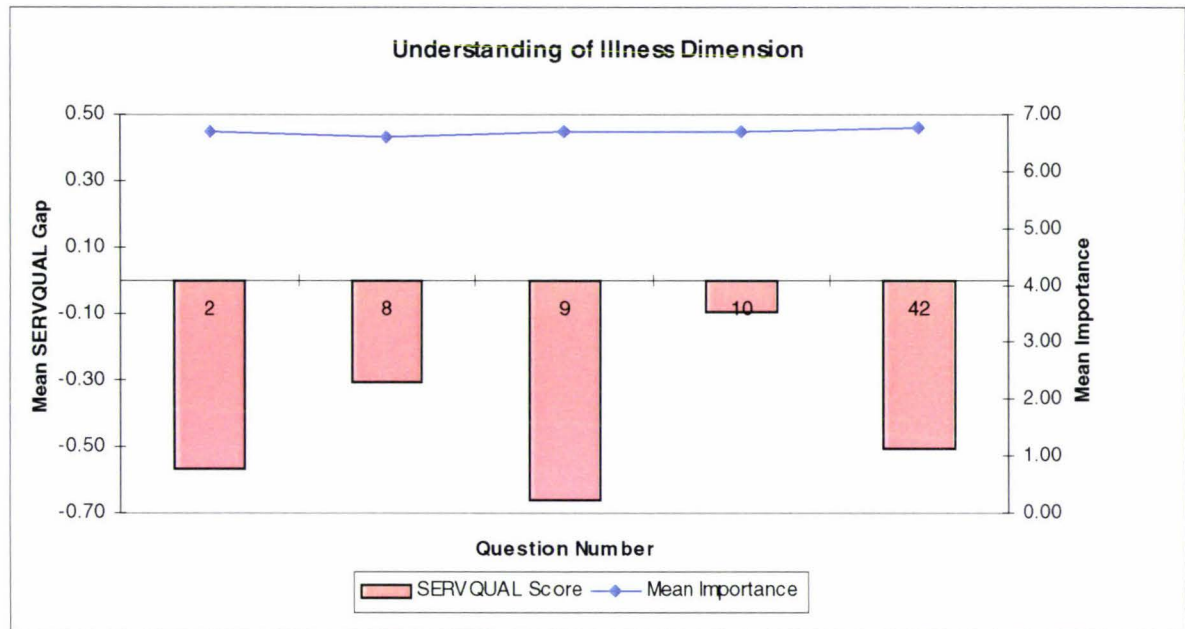
The specific question where the hospital performed the best and where the patients considered it relatively important was question 34 *'The nurses should spend time talking to me when ever they can'*. The question where the hospital performed the worse but was still considered important by the patients was question 51 *'The beds, pillows and mattresses should be comfortable'*

The implications of the effect that the small sample size has had on the two cultural questions (question 4 and 30) are discussed later. Here, they both need to be considered with caution.

### 5.7.3 Understanding of Illness Service Quality Dimension

The combination plot at Figure 5-9 and Table 1 show the results for the ‘Understanding of Illness’ service dimension.

**Figure 5-9 Mean Importance and SERVQUAL Score for Dimension 1: Understanding of Illness**



**Table 1 Understanding of Illness Questions**

Question Number	Question
2	Doctors should ensure that I understand my condition and its treatment.
8	Doctors should be very careful to check everything when examining me.
9	Doctors should give me medical advice in language which I can understand.
10	I should have a clear understanding of my current illness during this stay in hospital.
42	Doctors should be very thorough in their dealings with patients.



### 5.7.3.1 Understanding of Illness Open Ended Comments

#### Positive Comments

*The GP, surgeon and especially the receptionist have been exceptionally patient in answering all my questions.*

#### Negative Comments

*When I came to the hospital for my operation, I was told where my bed was and that was it. I thought I was waiting from half past seven to the time of my operation. I did not know there were procedures involved, like nurses and doctors coming around before the operation. I wish I was informed beforehand about this.*

*Some explanation of the equipment fitted would be useful i.e. catheter, drip and needle.*

*The devices are explained by nurses either during use or after removal. An understanding of these items would avoid problems.*

*The doctor I saw at pre-admin check up was a complete waste of money and space. He did not know about my operation.*

*When leaving the hospital with medication, I was unsure when I was meant to start taking it.*

*Some foreign doctors are very hard to understand.*

*Dr's, I appreciate are busy people however one or two words to tell you what they are about to do to you [would help].*

*Doctors never have the time to follow through with some of [the facets] of your questions.*

*Some don't even explain themselves properly.*

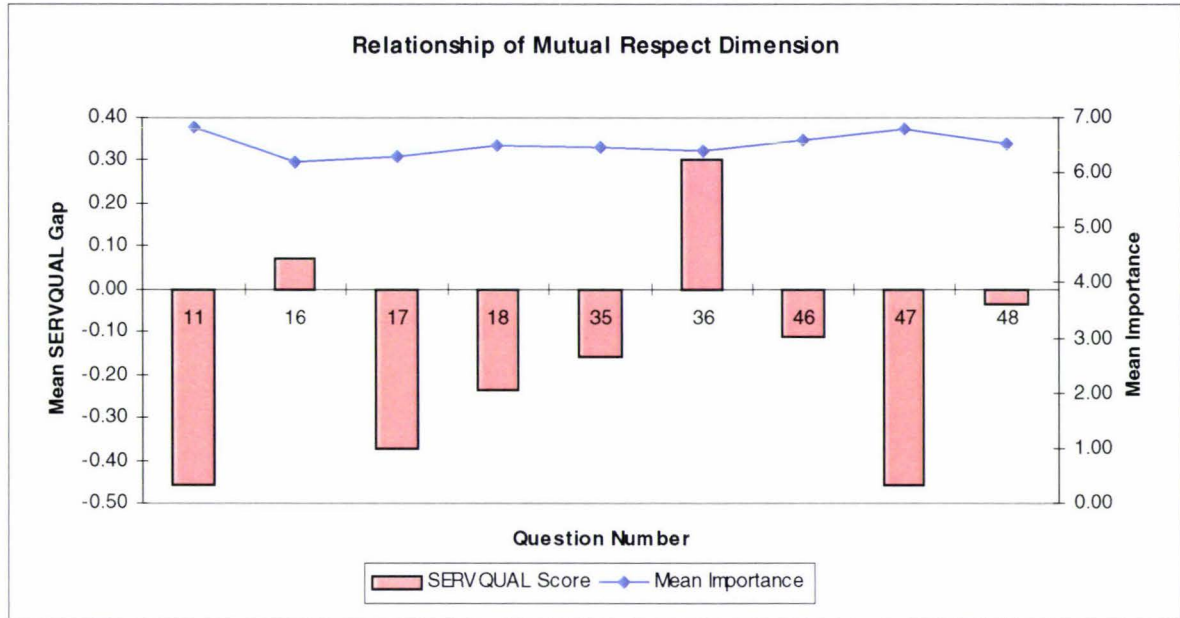
### **5.7.3.2 Understanding Illness Conclusion**

The SERVQUAL results, seen in Figure 5-9, concur with most of those from open ended questions. Generally, patients do not always have a good understanding of their illnesses. Given that this service quality dimension is considered to be the most important by the patients, the results are not very satisfactory. There appears to be a great deal of misunderstanding amongst patients. In most instances, for both the questionnaire and for the open ended responses, the comments refer to the way doctors are approaching the issue of explaining the illness to the patients and that they should use a more clear, sincere and concise manner. Clearly medical staff need to take more time with this aspect of care. It is not an option to assume that this responsibility can be delegated to other staff.

### 5.7.4 Relationship of Mutual Respect Service Quality Dimension

The combination plot at Figure 5- 10 and Table 2 show the Mutual Respect dimension.

**Figure 5-10 Mean Importance and SERVQUAL Score for Dimension 2: Relationship of Mutual Respect**



**Table 2 Mutual Respect Questions**

Question Number	Question
11	Doctors should be competent when performing tests and procedures on me.
16	A doctor should not appear to be in a hurry when he is speaking with me.
17	I should have enough confidence in my doctor to discuss very personal matters.
18	The nurses should treat me as a person and not just as a bed number.
35	The hospital should have my best interest at heart.
36	Nurses should be polite when speaking to me and my family.
46	My doctors should treat me with respect.
47	I should be able to place complete trust in my doctor.
48	Doctors should be courteous when speaking to me or my family.

#### **5.7.4.1 Mutual Respect Open Ended Comments**

*Try and match patients by age.*

*A better planned discharge procedure should be implemented.*

*We were kept in the dark about the 'bug' in the ward. Our fears would have been allayed if the staff had explained what was happening.*

*As an adult I feel if I have any concerns I'm more than capable of asking questions. To me the medical side of things is more important than what the ward looks like. It is not up to the staff to stop me worrying, it is up to me to ask questions or express how I feel to ease the worries.*

*Try to keep numbers of visitors per patient (particularly young children) to a minimum, during visiting hours.*

*I have nothing but praise for all the staff. Excellent care and attention by all concerned.*

*The attention I received from doctors, nurses, X-ray and blood test persons was good. I give my full endorsement to the very satisfactory handling of my needs and the after care with Post Op. Very good service indeed.*

*The overnight visitors made all the noise.*

*I find it very hard to understand that if a specialist requests a patient to have a certain item that occupational therapy have the right to over ride the specialist and veto the request thus making the patients life to consists of having to stay within her home and unable to lead a normal life. Is not a specialist a fully trained person who specialises in a particular part of medicine while occupational therapy specialises in making the patients life more bearable. Obviously am wrong and occupational therapy are the hierarchy of the hospital and specialists are at the bottom of the ladder. I am willing to put my name to this questionnaire.*

*Being a diabetic and going without food from 0700 until 1600 (I did not eat until 8-30 pm) was shocking. The theatre staff were not told I was a diabetic.*

*It seems that Maori in particular have no rules to abide by when visiting relatives. I observed a female accident patient arrive from surgery in my ward around 5 pm. Within the hour around 8 - 10 visitors arrived and at times seems to almost take over the patient care. This lady was distressed and in pain and unable to administer [medication] the nurses had to ask some visitors to move from their seats to get to the patient. Nursing staff should not have to tolerate this ... some positive control has to be exercised.*

*No late night Maori visitors.*

*The current practice of allowing Maori whanau unrestricted access and use of patient facilities at anytime day or night can be very stressful for other patients. My recent experience resulted in many sleepless nights and I also witnessed abuse of the nursing staff who were certainly doing their utmost in difficult circumstances.*

*The cultural needs of some should not be allowed to override the rights of other patients and nurses.*

*Some questions on cultural and religious grounds should not be taken too far as I feel you are in hospital for physical treatment not cultural or religious ideologies.*

*Questionnaire trivial.*

*The use of private TV sets should be policed and turned off at 10 pm not 11.45 pm.*

#### **5.7.4.2 Mutual Respect Conclusions**

As with the Importance dimension, Mutual Respect, the second most important dimension also shows consistently negative SERVQUAL Gap scores (Figure 5-10). This is another disconcerting result and reflects a lack of attention towards the patient in a number of areas. Questions 11, 17 and 47 all of which had negative scores, relate to the approach that doctors take towards patients. Given the high importance rating, it is disturbing to consider that patients do not think that doctors are always competent as in question 11, likewise, it is also disturbing that patients cannot put their trust in their doctor as is reflected in question 47. Contrasting these results it is gratifying to see that nurses are polite when dealing with patients, as seen in question 36.

The open ended comments raised the issue of respect from other patients. In particular, specific reference is made to the lack of respect from the visitors of Maori patients who seem to have their own set of rules on visitation times, number at any one time, and access to ward facilities. This may not necessarily a cultural issue but rather is a matter of respect for others. A solution may be to review the rules of the ward or perhaps enforce existing rules, that respect all patients.

### 5.7.5 Dignity Service Quality Dimension

Figure 5-11 Mean Importance and SERVQUAL Score for Dimension 3: Dignity

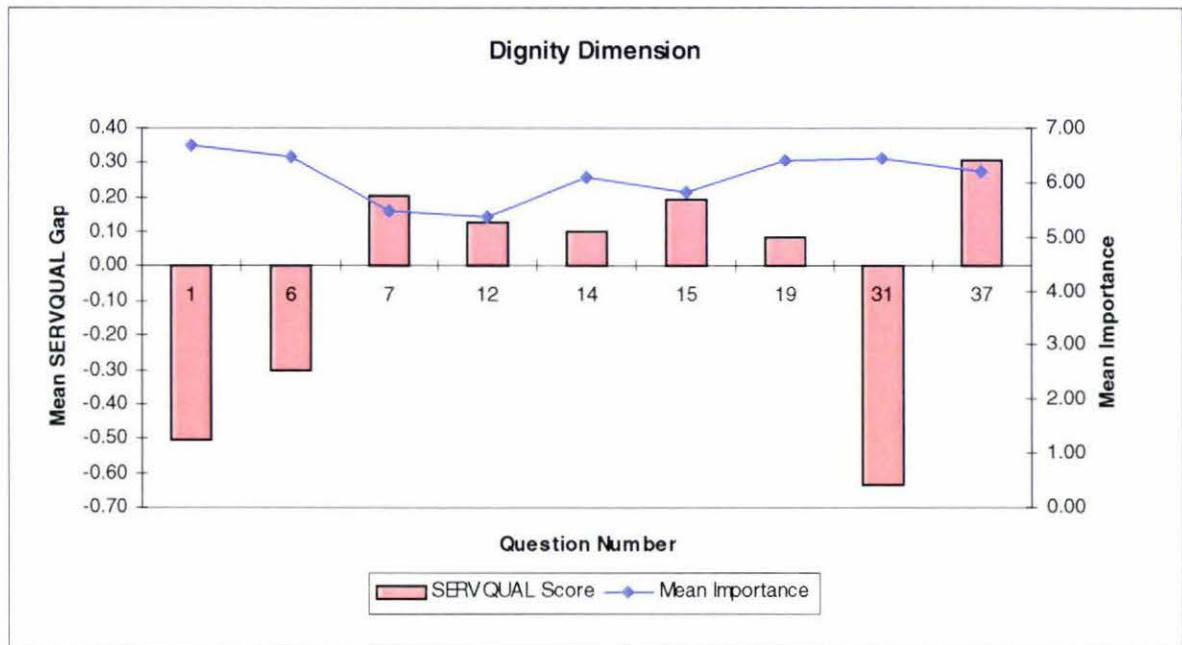


Table 3 Dignity Questions

Question Number	Question
1	My doctors should explain the reasons for the tests and procedures which are carried out on me.
6	Nurses should explain any procedures and tests before they are done on me.
7	The nurses should spend time with me discussing my worries regarding my stay in hospital.
12	My doctor should take a real interest in me as a person and not just my illness.
14	Doctors should ask my permission before performing any tests on me.
15	Nurses should ask for permission before performing any procedures on me.
19	I should be treated with dignity and be given privacy during my hospitalisation.
31	Nurses should explain the rules and regulations of the ward to me.
37	Nurses should be kind, gentle and sympathetic at all times.

### **5.7.5.1 Dignity Open Ended Questions**

*My dressings weren't changed for 1 hour after my shower.*

*While unable to help myself, my hands were never washed prior to meal times.*

*The placement of urine bottles on bedside cabinets and the time they were left there after use [was a concern].*

*Medication was not given for five days as I was meant to administer it myself but I was unable to due to morphine and being depressed.*

*One nurse was excellent but I only had her for seven of the sixteen days.*

*Nursing staff were great, given that they had ten more patients in the ward than they should have, they still managed to give me personal care. Ten points to them.*

*I have no complaints with my hospital care. Nurses and Doctors were excellent.*

*I feel that the staff do a good job and that the nurses and doctors are one hundred percent.*

*Doctors and nurses were great.*

*[Hospital] has always treated me with care and I have every faith in the treatment.*

### **5.7.5.2 Dignity Conclusions**

This dimension as shown in the combination plot in Figure 5-11 and Table 3 is quite good with the exception of three questions, namely question 1, '*My doctors should explain the reasons for the tests and procedures which are carried out on me*' which requires some process improvement. Question 6 '*Nurses should explain any procedures and tests before they are done on me*' and question 31 '*Nurses should explain the rules and regulations of the ward to me*', which appears not to occur in all instances.



According to the open ended comments, a small number of patients seemed to receive unduly harsh treatment however, in contrast a large number described excellent care.

### 5.7.6 Physical Environment Service Quality Dimension

Figure 5-12 Mean Importance and SERVQUAL Score for Dimension 4: Physical Environment

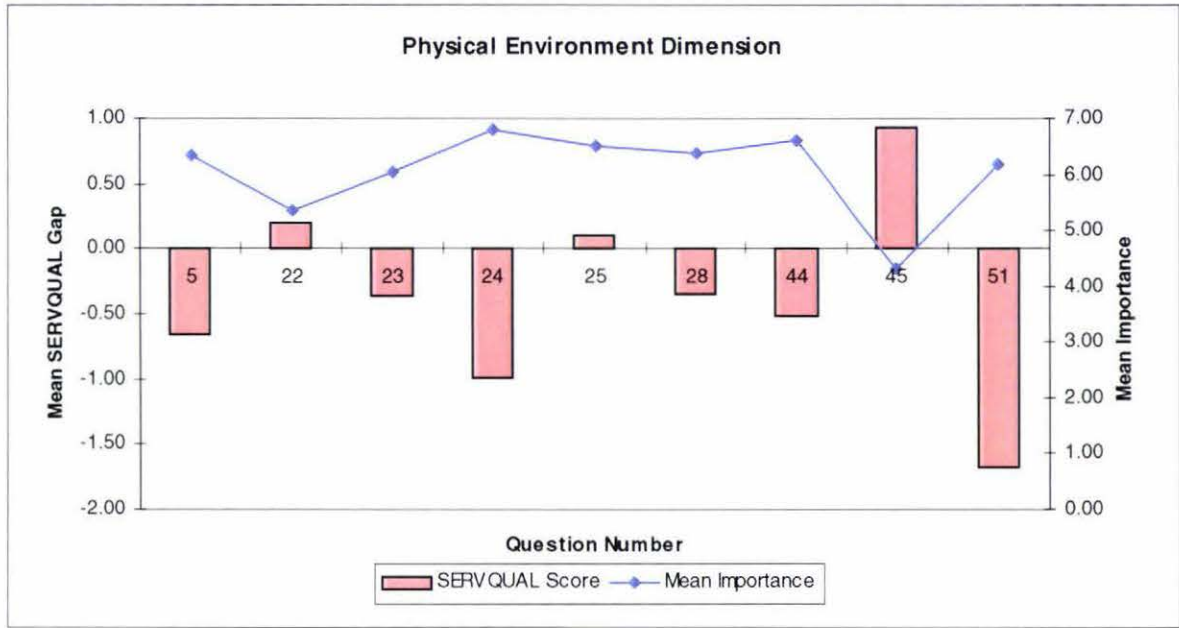


Table 4 Physical Environment Questions

Question Number	Question
5	The hospital should provide sufficient bathrooms and toilets in the wards.
22	Noises occurring outside the ward e.g. traffic, should be kept to a minimum.
23	At night the noise inside the ward e.g. TV, Staff, Kitchen should be kept to a minimum.
24	The bathrooms and toilets should always be kept clean and pleasant to use.
25	The screens should always be drawn around my bed whenever medical procedures and examinations are carried out.
28	The ward should be well ventilated and always fresh and well aired.
44	The ward should be clean at all times.
45	The ward should be kept well decorated.
51	The beds, pillows and mattresses should be comfortable.

### 5.7.6.1 Physical Environment Open Ended Questions

*The TV day room could do with a lick of paint. Also the rooms have tatty wallpaper.*

*The beds are uncomfortable and noisy.*

*Cleaning of the toilets is a bit rough.*

*Good having the [newspaper] available for sale.*

*I strongly resent sharing toilet facilities with males.*

*Hygiene and cleanliness go hand in hand with health.*

*The pillows are a misnomer. I notice nearly everyone brought their own in. They are like stiff whoopie cushions without the whoopie. They deflate into a crackling plastic pile-I used towels until I had my own brought in.*

*The toilets in the ward were filthy.*

### 5.7.6.2 Physical Environment Conclusions

Again there are a number of negative question responses for a reasonably important dimension, as shown in Figure 5-12. Question 51 '*The beds, pillows and mattresses should be comfortable*' had the largest negative score for the entire survey. Uncomfortable beds seem to be a significant feature of a stay in this hospital. It is noteworthy that question 45 pertaining to decor in the ward did not score a particularly high importance rating suggesting that patients do not care greatly about what the ward looks like. This was an unexpected finding. Given that the hospital is generally catering for the older age group (average age of in-patients of 67 yrs for males and 55 yrs for females), it was expected that they would care a great deal about what the appearance of the ward. This did not appear to be the case. Cleanliness in the toilets did not have a very good SERVQUAL score. This has

obvious hygiene implications and has to be a concern for the hospital management. Only one person commented on the need for separate male and female toilets.

### 5.7.7 Empathy Service Quality Dimension

Figure 5-13 Mean Importance and SERVQUAL Score for Dimension 5: Empathy

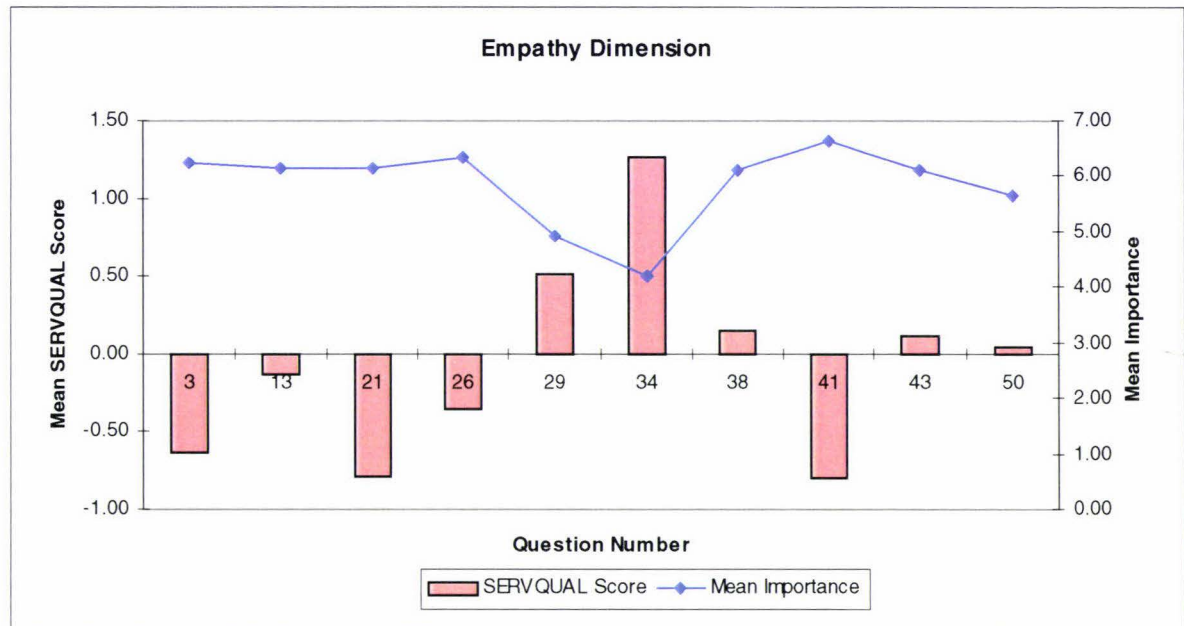


Table 5 Empathy Questions

Question Number	Question
3	Doctors should spend time with me discussing my fears and concerns about my condition.
13	Even if the doctors cannot cure me right away, they should make me feel more comfortable.
21	My doctors should present me with options when deciding on my medical care.
26	Doctors and nurses should involve me when making plans regarding my medical care.
29	On my arrival at the ward, the doctor should attend to me quickly.
34	The nurses should spend time talking to me whenever they can.
38	The nurses should attend to me quickly when I ask for help.
41	My doctors should discuss my post hospital care with me.
43	Doctors should do their best to keep me from worrying.
50	Doctors should do their best to make me feel better emotionally.

### 5.7.7.1 Empathy Open Ended Questions

#### Positive Comments

*Nurses were great. I felt I was being looked after professionally and really appreciated the sincerity of my two nurses. They were wonderful.*

*When I was intimidated by a prison inmate patient the nurses and doctors were quick to take action and an incident report was filled in and actioned by management.*

*Overall my stay and attention received was excellent.*

*Staff were wonderful.*

*The nurses attend as quickly as they can but in the event of an emergency, or a completely full ward with a lot of new admissions, the staffing is inadequate. Staff ratios should be flexible to allow for such pressures so other patients are not waiting too long for a bed pan etc.*

*From time to time I feel it is necessary for a responsible family member to be allowed into theatre especially if patients are fearful and not being sedated. This has happened for me and I feel it is a good thing as it gives the patient some emotional support when they really need it.*

*A staff are A1.*

*Nurses were excellent helpful and supportive.*

*The nursing staff are commendable.*

*The nursing staff were a very dedicated team and in no way deserve the abuse that they were subjected to.*

*It's a good hospital, they work hard to give a good service. Lucky to have it.*

*I thought it was very good. Would recommend it to anyone.*

*The doctors were pretty good in the treatment of me.*

*A phone call the day after my surgery, from a nurse was impressive.*

*My overall impression of [the hospital] has improved since I last had treatment there.*

*A big thank you to [the hospital].*

*Nurses wonderful.*

*The general atmosphere in the hospital was excellent. The care could not be faulted. A very well run hospital with excellent nurses right down to the porters and reception.*

*The ambience of a hospital is reflected from staff and therefore passed on to patients ensuring well being and inturn reinforcing a better recovery.*

*Despite the negative feedback in the community about [the hospital], I have always had the best possible care whenever I have had to use your service. Well done on performing an excellent job with the huge challenge of government funding cuts.*

*I would like to make specific mention of one nurse (Name Omitted) who was unfailingly compassionate, patient and gentle.*

*The wheelchair orderly was very helpful.*

*I was impressed with the doctors.*

*Nurses were excellent and kind.*

*Negative Comments.*

*Some [nurses] are rude and don't seem to want to help.*

*Nurse on the other side of the room very unpleasant.*

*Nurses are understaffed and don't seem to have time.*

*The ward was full yet the same number of staff were meant to cope.*

*More good caring nurses are required. Pay them well and don't expect them to work for so long.*

*I feel that nearly all was answered by no 7 but also like to mention that it all hinges on the present rush in the ward as every answer is to not hold up treatment.*

*Dedicate emergency staff to emergencies and day surgeons to day surgery.*

*No shower for 4 days after surgery and only then when I had a family member help me.*

*The dressing was not changed. I was told to remove it myself. There was no assistance to help me get walking. The nurse had disregarded the doctors wishes to remove the catheter. I was left to try and wash myself in bed... the total disregard for patients is abysmal.*

*The attitude of one of the more senior nurses was pleasant at admission but that was the last time she spoke to me with a civil tongue.*

*Too long waiting for day surgery. Admission time should be within one hour of operating time. Work to a time specific plan rather than bunching people up into waiting wards. Waiting is the worst thing to do before an operation.*

*24 hrs post op the drip oxygen, morphine apparatus were removed I was coerced onto getting out of bed first thing for a shower. I was left on my own by a young although experienced nurse. On the third day I was prescribed strong antibiotics which were give at odd hours (not with food). I spent the next day feeling nauseous and slightly depressed. On getting a friend to check my chart she noted that anti-nausea medications had been charted but none were given. I was very upset at having my recovery hindered and feeling ill, an unnecessary event. My faith in that nurse was seriously effected. I also felt that the two nurses were rude and unprofessional when thy spoke to other patients sharing my room. They were elderly women who deserved more respect. This happened on my second to last day in hospital and it upset everyone in my room. It is because the nursing staff are so busy and understaffed perhaps !!! In this ward this week I would haveto say yes. !!*

*Nurses were all too busy to spend time with me.*

*It would be pleasant to have patients who can get along together in the same room-sharing rooms with persons of similar age etc.*



*A lot of noise from the very sick person next to me and people coming and going. The staff made no attempt to keep the noise down.*

#### **5.7.7.2 Empathy Conclusions**

This dimension shown in Figure 5-13 and Table 5, was one of contrasts, with both negative and positive results for both the SERVQUAL gaps and for the open ended comments. The contrast between the negative SERVQUAL scores and the high Importance ratings are reflected in relatively large weighted SERVQUAL scores back in Figure 5-8, with the three dominant negative SERVQUAL gaps ( Questions 3, 21 and 41), which all refer to the patient / doctor relationship, featuring in the extreme negative end of the weighted scores.

The positive SERVQUAL scores pertain mainly to the amount of attention paid to patients. Interestingly the highest positive Gap for the entire survey, question 34 had a low importance rating. This importance rating is not consistent with the rest of this dimension. If this result could be repeated in a subsequent survey, it may suggest that nurses are paying too much attention to patients.

The contrasting open ended comments identify dramatically different impressions of care that different patients have received. The challenge must be of the organisation, over time, to decrease the number of negative comments and increase the number of positive ones.

### 5.7.8 Tangibles, Food Service Quality Dimension

Figure 5-14 Mean Importance and SERVQUAL Score Dimension 6: Tangibles; Food

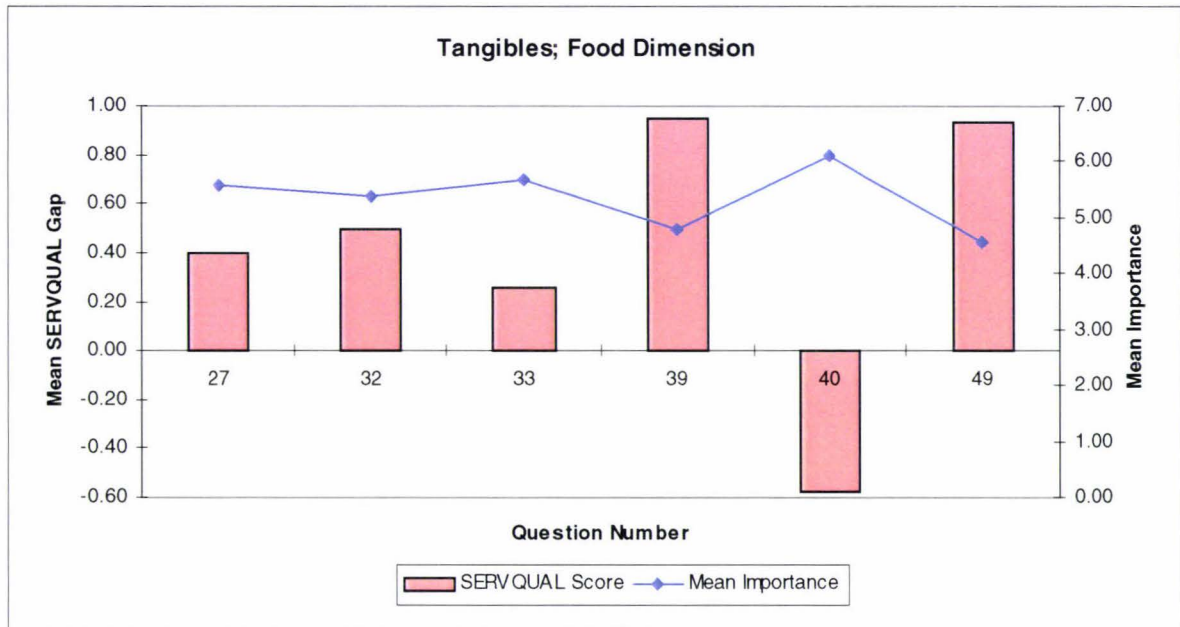


Table 6 Tangibles, Food Questions

Question Number	Question
27	The meals should be well presented i.e. the food should be nicely arranged.
32	There should be a choice of food on the menu.
33	I should be given the food that I have ordered.
39	I should be asked what size meal I would like.
40	The meals should be hot when they are served.
49	After each meal, the plates should be cleared immediately.

### **5.7.8.1 Food Open Ended Questions**

Positive comments

*The meals were up to a very good standard and nicely presented.*

*Meals were excellent however I did receive someone else's meal.*

*Meals excellent.*

Negative comments

*Food is prepared on a budget. It also depends on the cooks frame of mind when preparing meals.*

*Meals sat in the wards for a while before serving.*

*The mix of porridge and peaches for breakfast was a weird combination in anybody's imagination.*

*Shame husband and wife can not have a drink when morning and afternoon tea served.*

*This used to be provided.*

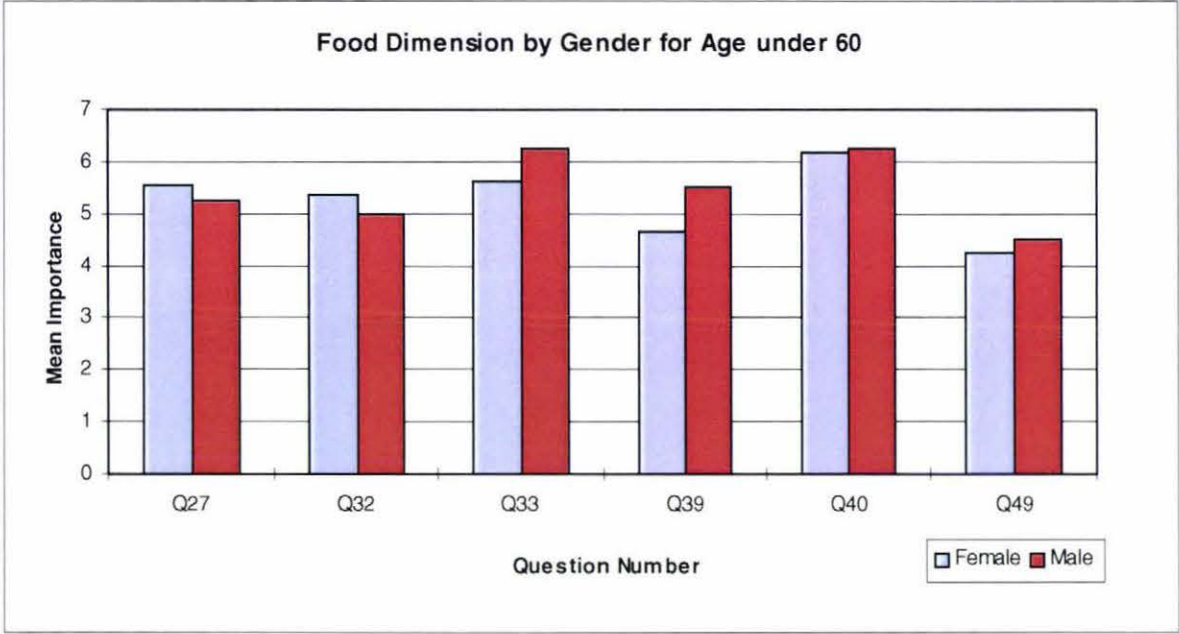
*My 'special diet' just was not there.*

### **5.7.8.2 Tangibles Food Conclusions**

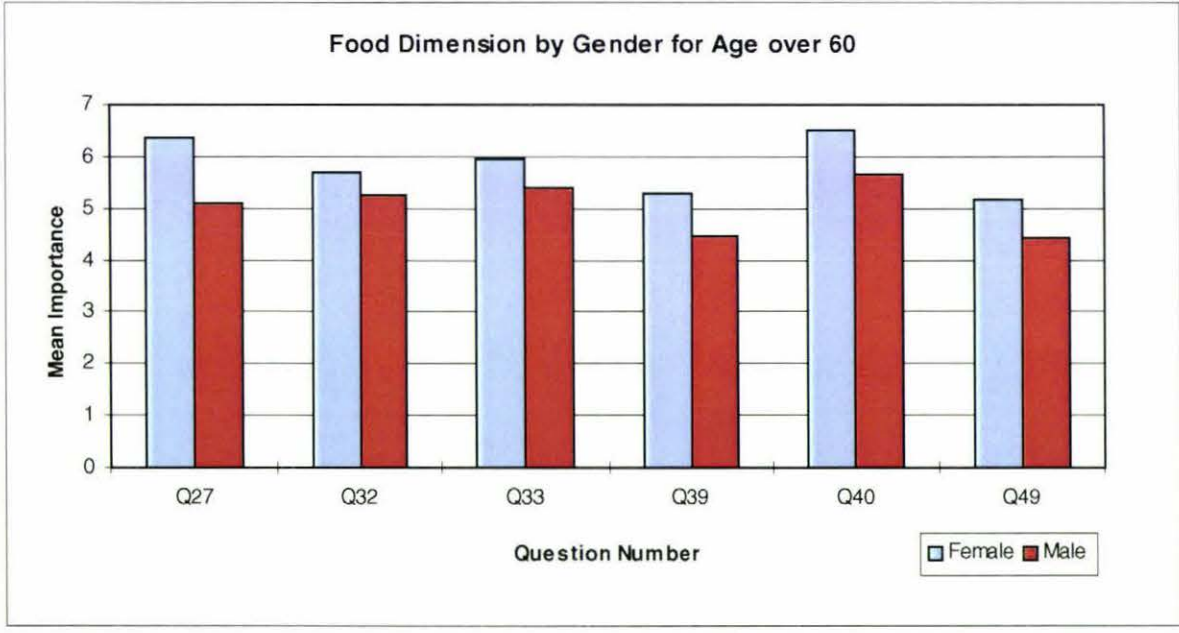
The food dimension was the only one to show a generally positive SERVQUAL response across the entire sample frame as shown in Figure 5-14. Question 40 does suggest that the food is not hot enough when it is served.

When separated by gender and age, it is apparent as seen in Figure 5-15 and Figure 5-16, that there is a difference in the importance response between males and female of different ages. The over 60 year old respondents replied with females consistently showing a greater importance than males. However, for the under 60 age group this is reversed, with males ranking some questions higher than the females. This was one of only two instances in the entire survey when males ranked questions more important than females.

**Figure 5-15 Food Dimension by Gender for Age Under 60 Years**



**Figure 5-16 Food dimension by Gender for Age Over 60 Years**

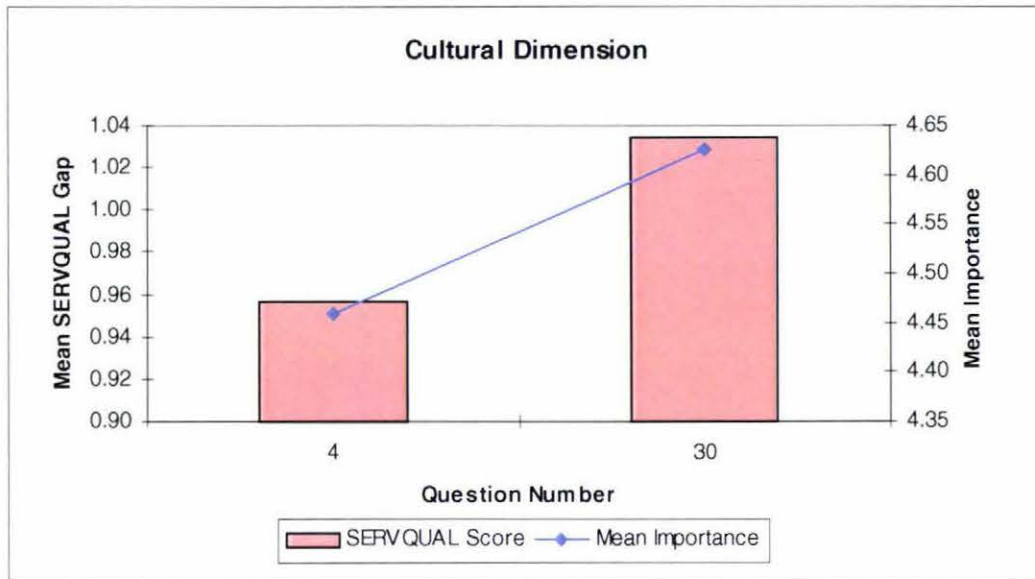


It could be speculated from these results and other age related results further on that a good overall service quality rating could be achieved for males under 60 yrs simply by providing good food. A somewhat simplistic finding that may have some substance to it.

Generally, the food dimension did not have a high importance rating over the entire sample frame and the organisation more than met the patients needs, with the exception that the food is not hot enough by the time it is served.

### 5.7.9 Cultural Needs Service Quality Dimension

**Figure 5-17 Mean Importance and SERVQUAL Score of Dimension 7: Cultural Aspects**



The cultural response as seen in Figure 5-17 suffers from the same no response issues as does the religious dimension in Figure 5-18. However the mean importance for those who did reply would suggest that the nurses and doctors are performing above expectation with respect to cultural needs.

**Table 7 Cultural Aspects Questions**

Question Number	Question
4	The nursing staff should be familiar with any cultural concerns during my stay in hospital.
30	The doctors should be familiar with cultural aspects when treating me.

### 5.7.9.1 Cultural Open Ended Comments

All of the cultural comments came from Non-Maori respondents.

*It seems that Maori in particular have no rules to abide by when visiting relatives. I observed a female accident patient arrive from surgery in my ward around 5 pm. Within the hour around 8 - 10 visitors arrived and at times seemed to almost take over the patient care. This lady was distressed and in pain and to administer [medication] the nurses had to ask some visitors to move from their seats to get to the patient. Nursing staff should not have to tolerate this, some positive control has to be exercised.*

*No late night Maori visitors.*

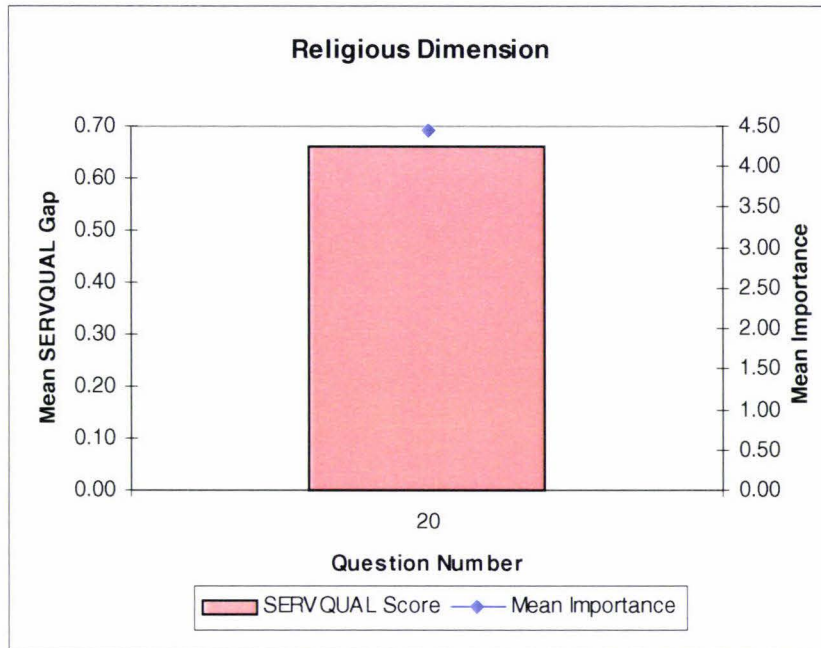
*The current practice of allowing Maori whanau unrestricted access and use of patient facilities at anytime day of night can be very stressful for other patients. My recent experience resulted in many sleepless nights and I also witnessed abuse of the nursing staff who were certainly doing their utmost in difficult circumstances.*

*The cultural needs of some should not be allowed to override the rights of other patients and nurses.*

*Some questions on cultural and religious grounds should not be taken too far as I feel you are in hospital for physical treatment not cultural or religious ideologies.*

### 5.7.10 Religious Needs Service Quality Dimension

**Figure 5-18 Mean Importance and SERVQUAL Score for Dimension 8: Religious Needs**



**Table 8 Religious Needs Questions**

Question Number	Question
20	I should have access to religious support of my choice whilst in hospital.

#### 5.7.10.1 Religious Needs Open Ended Comments

*Some questions on cultural and religious grounds should not be taken too far as I feel you are in hospital for physical treatment not cultural or religious ideologies.*



#### **5.7.10.2 Conclusions from both the Religious and Cultural Dimensions**

For the religious dimension, there are a number who consider the dimension important but equally there are a number who do not care and did not reply to the question. If these results reflect the group who do care then it would appear that their requirements are being met. The challenge for the organisation is to satisfy both groups because there are a number who may be offended by any religious contact.

For the cultural dimension, there are a number who did not comment, for the others the issue is neither important and is already exceeding expectation. Cultural concerns appear to be over rated, however, the “No Response” from Maori respondents may be causing a false impression.

## 5.8 Factor Analysis

The factor analysis was attempted using the ‘Before’ component of the results set in an attempt to ascertain the construct validity. The gap scores could not be used with this small number of results because the number of zero scores received meant that there was very little variation amongst the data and therefore no useful analysis would be possible. As it was, even using all the replies, there was still not enough variation to undertake this process fully, using the before responses.

Two different approaches were taken, neither of them were effective.

Firstly, Principle Components Analysis was undertaken, on the raw data, in an attempt to identify those factors with a high common variation (as indicated by a high eigenvalue). 12 factors showed eigenvalues approximately 1 or greater.

Factor analysis using a Varimax rotation was then undertaken using the 12 factors as identified by the Principle Components Analysis. Although separation by factor is evident as seen in Appendix 5, only one factor showed a percentage variation above 10%. Communalities did not reach 1.0 on any occasion which implies that there is still a degree of variance for each question, spread across the factors.

The second approach was to undertake the factor analysis simply using the 6 expected factors as per the service dimension (minus the cultural and religious dimension for which there were insufficient replies). A similar set of results was obtained as for the first approach. Again some separation is occurring but the data set is just too small to give sufficient variation for the factor analysis to be effective.

The separation of the questions into these factors for both approaches bore no resemblance to the spread seen by Tomes and Ng.

## 5.9 Demographic Results

The demographic results are presented firstly, by Gender, relative to both the age distribution and effect on question responses, secondly Gender by Ethnic Identity and then finally the Length of Stay separated by Day Stay and Long Stay patients.

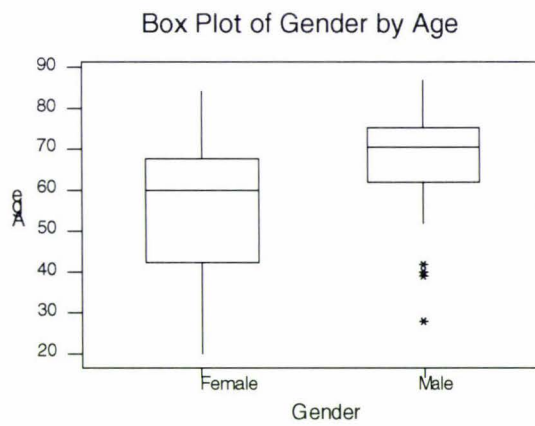
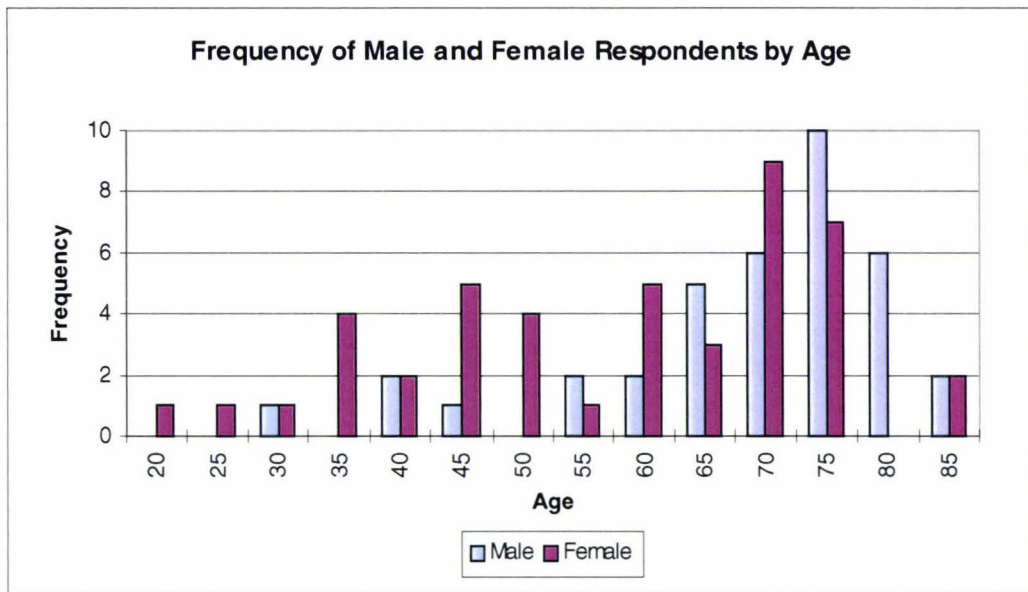
### 5.9.1 Gender by Age Distribution

The age distribution for male and female respondents described in Table 9 and Figure 5-19 shows two separate distributions with the box plot showing males clustered narrowly around the 65 - 75 year age group, with a few outliers and female ages more spread over the entire age spectrum. Given the lack of clinical information sought for this project, it is difficult to explain this accurately, but the data would suggest that elective surgery is required on females at an earlier age than males.

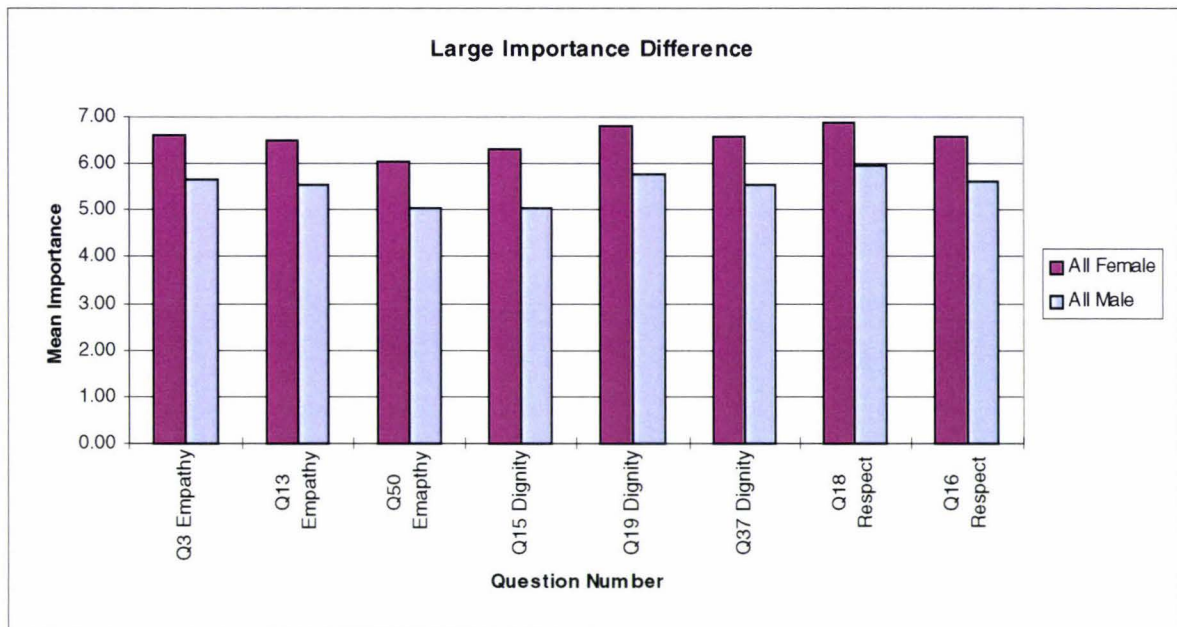
**Table 9 Gender by Age Distribution**

	<b>Number</b>	<b>Mean</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Q1</b>	<b>Q3</b>
		<b>yrs</b>	<b>yrs</b>	<b>yrs</b>	<b>yrs</b>	<b>yrs</b>	<b>yrs</b>
<b>Males</b>	38	67.05	70.50	28	87	62.00	74.0
<b>Females</b>	45	55.67	60.00	20	84	42.50	67.50

**Figure 5-19 Frequency of Male and Female Respondents by Age**



**Figure 5-20 Questions by Gender with Large Differences in Importance**

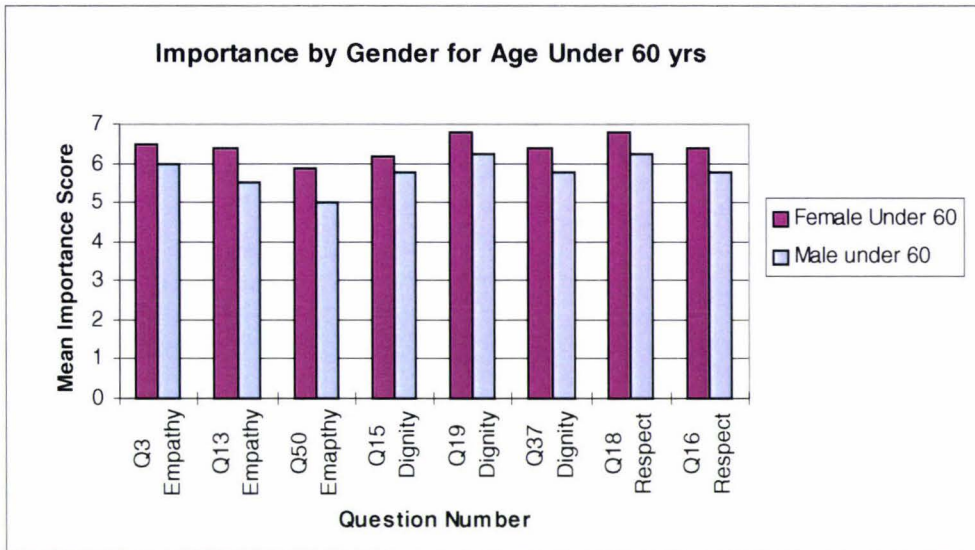


Mean importance differences, between males and females, of approximately one are shown in Figure 5-20. A consistent trend of females having a higher mean importance rating than males is evident.

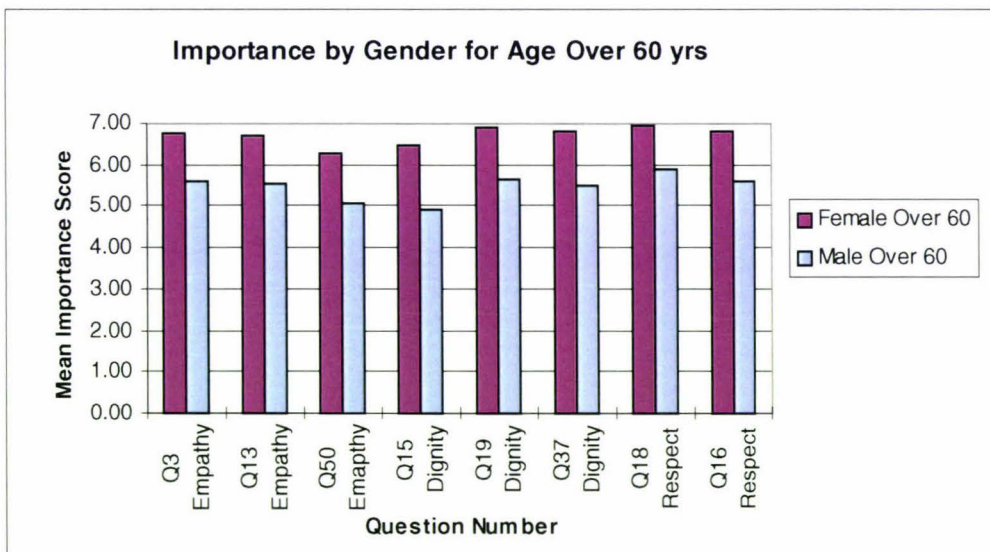
### 5.9.2 Gender by Age Importance Ratings

Given the large age range for females as opposed to the small age range for males, it is possible that the difference in importance rating may be due to age as opposed to gender differences. Figures 5-21 and 5-22 show the split of the large importance gaps by gender for those aged under 60 years and for those aged over 60 years, for both males and females. While the importance gaps between males and females for the over 60 year olds are generally larger (mean difference between males and females being 1.23) than those under 60 years of age (mean difference between males and females being 0.63), the general trend of females showing a higher importance rating than males still exists.

**Figure 5-21 Large Importance Gap by Gender for Age under 60 years**



**Figure 5-22 Large Importance Gap by Gender for Age over 60 years**

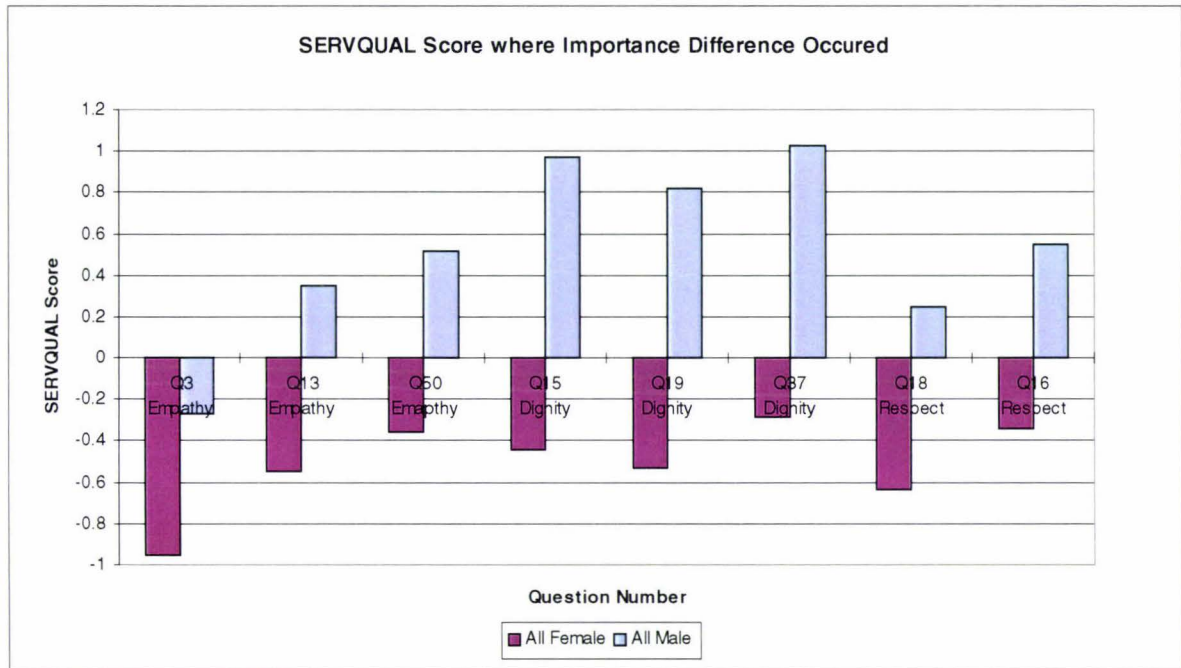


There is a slight increase in overall importance, between the two age groups (6.418 increases to 6.71) for females-whereas for males, the trend is slightly reversed (5.78 decrease to 5.48). This would suggest that females are tending to find issues only slightly more important as they age. Males are tending to find issues less important as they age. Although there is some suggestion that the gaps are age related, the general trend in the differences in importance rating is still considered to be gender related and not age related.

### 5.9.2.1 SERVQUAL Scores for Questions with Large Importance Gaps

Figure 5-23 represents the SERVQUAL scores for those questions where an importance difference, of approximately one, occurred between the genders. Three of the questions belong to the Empathy dimension, three to Dignity and two to Mutual Respect.

**Figure 5-23 SERVQUAL Scores Where Importance Rating was Different**



**Table 10 Questions with Importance Gender Differences**

Question Number	Question
3	Doctors should spend time with me discussing my fears worries regarding my stay in hospital.
13	Even if doctors can not cure me right away, they should make me feel more comfortable.
50	Doctors should do their best to make me feel better emotionally.
15	Nurses should ask for permission before performing and procedures on me.
19	I should be treated with dignity and be given privacy during my stay in hospital.
37	Nurses should be kind gentle and sympathetic at all times.
18	The nurses should treat me as a person and not just as a bed number.
16	A doctor should not appear to be in a hurry when he is speaking with me.

Figure 5-23 shows consistently divergent trends between the genders. Males generally find these issues less important than females and from the SERVQUAL Score they appear to be more than satisfied with the service they receive. In contrast females who find these issues relatively more important, are consistently dissatisfied with these aspects of the service.

This is possibly an example of the stoic attitude that many males have towards their health, where emotion and feelings are not normally expressed - whereas with females, empathy, dignity and mutual respect are important consideration. Unfortunately it would appear that this aspect of care is not provided very well by this hospital.



### 5.9.3 Gender by Ethnic Identity and Length of Stay in Hospital

The Gender of the respondents was separated by Ethnic Identity and Length of Stay in hospital (in days), as in Table 11.

**Table 11 Gender by Length of Stay and Ethnic Identity**

	Caucasian				Maori				New Zealander			
Length of Stay (days)	<1	1-2	>2	Total	<1	1-2	>2	Total	<1	1-2	>2	Total
Female	3	7	23	33	2	0	3	5	0	2	5	7
Male	8	5	18	31	1	0	0	1	0	2	4	6
Total	11	12	41	64	3	0	3	6	0	4	9	13

### 5.9.4 Ethnic Responses

The group with the highest reply rate were Caucasian, with approximately a 50% female, 50% male split. A number of respondents felt compelled to call themselves New Zealanders, although this option was not initially offered.

#### 5.9.4.1 Maori Responses

A noticeable feature from the Maori group was the poor response rate overall with only one reply from a male Maori. Given that the ethnic separation was done largely for the benefit of the Maori group, this is unfortunate, because, only preliminary conclusions can be drawn from the data.

A count of the sign of the response to each question was undertaken. Of the 306 possible responses, from the six Maori replies received, there were 65 positive gaps, 80 negative

gaps, 130 zero gaps and 32 no responses. With the exception of the two cultural questions discussed below, no questions stood out with consistently the same sign. If the percentage of zero scores continued then it could be speculated that this group is generally satisfied with the service provided with the exception of questions 4 and 30.

Table 12 shows the Maori responses to the cultural questions, namely; question 4 *‘The nursing staff should be familiar with any cultural concerns during my stay in hospital’* and question 30 *‘The doctors should be familiar with cultural aspects when treating me’*.

Two of the Long Stay patients appear to be dissatisfied with the way they were treated culturally, while the other four patients made little comment.

**Table 12 Maori Responses to the Ethnic Questions**

Patient Number	Ethnic Identity	Length of Stay	Q4	Q30
1	Maori	Long Stay	-2	-1
2	Maori	Day Stay	0	1
3	Maori	Long Stay	*	*
4	Maori	Long Stay	-3	-2
5	Maori	Day Stay	1	*
6	Maori	Day Stay	*	*

### **5.9.5 No Response Bias**

Frankfort-Nachmias and Nachmias (1996), describe a possible bias that can be introduced because of the 'No Responses'. Typically, mail questionnaires, for example, result in an upward bias in education. In other words, well educated people more frequently respond to questionnaires than the less educated. The consequence of this is that generalisations made about the entire population need to be made with caution. No information was collected regarding respondent level of education and therefore, the extent of this is unknown.

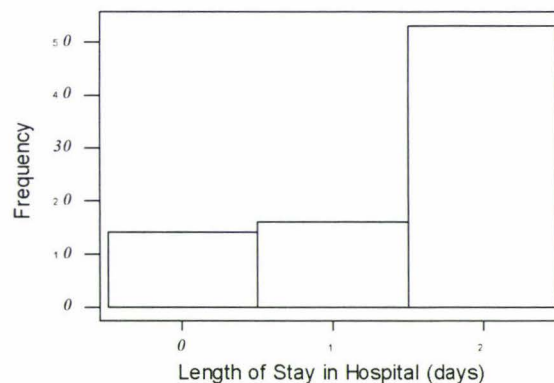
The small number of Maori responses may have introduced a bias in the cultural responses. No specific cultural concerns were expressed, however, that may not be a true reflection of the Maori population, who have received care at this hospital.

There appeared to be nothing specific about these responses that required this group to be separated from the other ethnic groups. Alternatively it could be speculated that the written word may not be an appropriate medium to use to solicit responses from the Maori respondents. Face to face contact may be more appropriate, to avoid the 'No Response' issue.

### 5.10 Results by Length of Stay

The majority of responses, as seen in Figure 5-24, came from group the who had been admitted to the hospital for two or more days. To identify any specific differences between this group and Day Stay patients, it was considered adequate to amalgamate the other two groups i.e. anyone admitted for less than two days became 'Day Stay' and anyone who was admitted for two days or more became the 'Long Stay' group. It has been worthwhile separating these two into separate strata because differences in responses are evident.

**Figure 5-24 Length of Stay for Total Sample Frame**



Initially, an unknown feature of the Day Stay group were those aspects of care that they were not exposed to because they were not in hospital long enough e.g. food, religious contact etc. They may have had some difficulty in answering some questions in the questionnaire accurately. In these instances it was expected that there would be a number of no responses to these questions, as described in Table 13.

**Table 13 No Response Questions from Day Stay Patients**

Question Number	Number of Responses	Number of No Responses	Question
4	28	6	<i>Cultural</i> The Nursing Staff should be familiar with any cultural concerns during my stay in hospital
20	28	11	<i>Religious</i> I should have access to religious support of my choice whilst in hospital
23	28	5	<i>Noise</i> At night the noise inside the ward should be kept to a minimum
27	28	4	<i>Food</i> The meals should be well presented
30	28	11	<i>Cultural</i> The doctors should be familiar with cultural aspects when treating me.
33	28	9	<i>Food</i> I should be given food that I have ordered
39	28	10	<i>Food</i> I should be asked what sized meal I would like
40	28	7	<i>Food</i> The meals should be hot when they are served
49	28	7	<i>Food</i> After each meal the plates should be cleared immediately

**5.10.1 Don't Know Responses.**

This refers to the 'Don't Know' or 'Not Applicable' option often seen on questionnaires.

These are again a controversial issue with some researchers preferring to insist on a response by not including the 'Don't Know' option (Ott and Mendenhall, 1994). Schuman and Presser (1996) further support the removal of the option provided that it is excluded only to eliminate the evaders and not those who are hesitant. Against this argument Vavra (1997), contends that there may be some who just have no idea how to answer the question and therefore should be given the option of a no response.

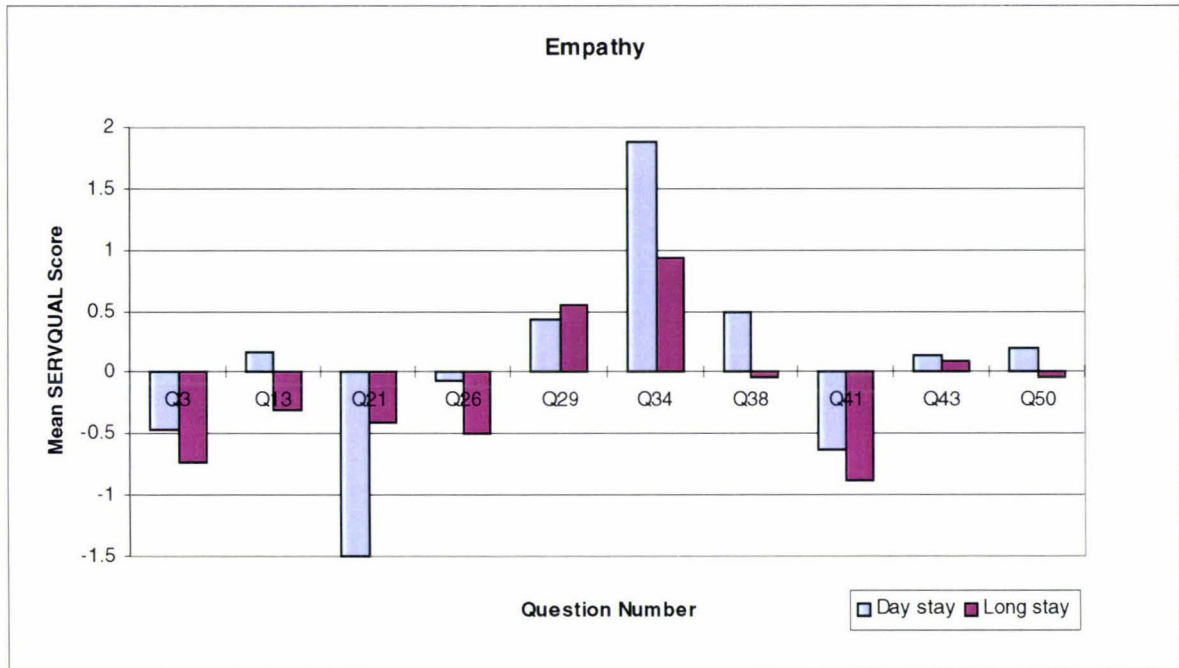
During this project the position was taken that the questions were well designed and tested by previous researchers. In addition the focus group work developed questions from the customer group and therefore they must have an opinion otherwise the question would not appear in the questionnaire in the first place. It was also important for the disconfirmation aspect of the SERVQUAL calculation that we obtained a number each question.

In a number of instances as seen Table 13, the Day Stay patient's questions went un-answered, which was a good indication that a re-think of this approach is required if the questionnaire is to be utilised for future longitudinal studies. It appears acceptable that this group can be dealt with as a subsection of the sample frame, with a questionnaire containing fewer questions.

### 5.10.2 Responses by Length of Stay and Service Quality Dimension

To identify any differences in the response between Day Stay and Long Stay patients, the SERVQUAL responses have been grouped by dimensions in the Tomes and Ng questionnaire.

**Figure 5-25 Empathy Dimension by Length of Stay**



**Table 14 Empathy Questions**

Question Number	Question
3	Doctors should spend time with me discussing my fears and concerns about my condition.
13	Even if the doctors cannot cure me right away, they should make me feel more comfortable.
21	My doctors should present me with options when deciding on my medical care.
26	Doctors and nurses should involve me when making plans regarding my medical care.
29	On my arrival at the ward, the doctor should attend to me quickly.
34	The nurses should spend time talking to me whenever they can.
38	The nurses should attend to me quickly when I ask for help.
41	My doctors should discuss my post hospital care with me.
43	Doctors should do their best to keep me from worrying.
50	Doctors should do their best to make me feel better emotionally.

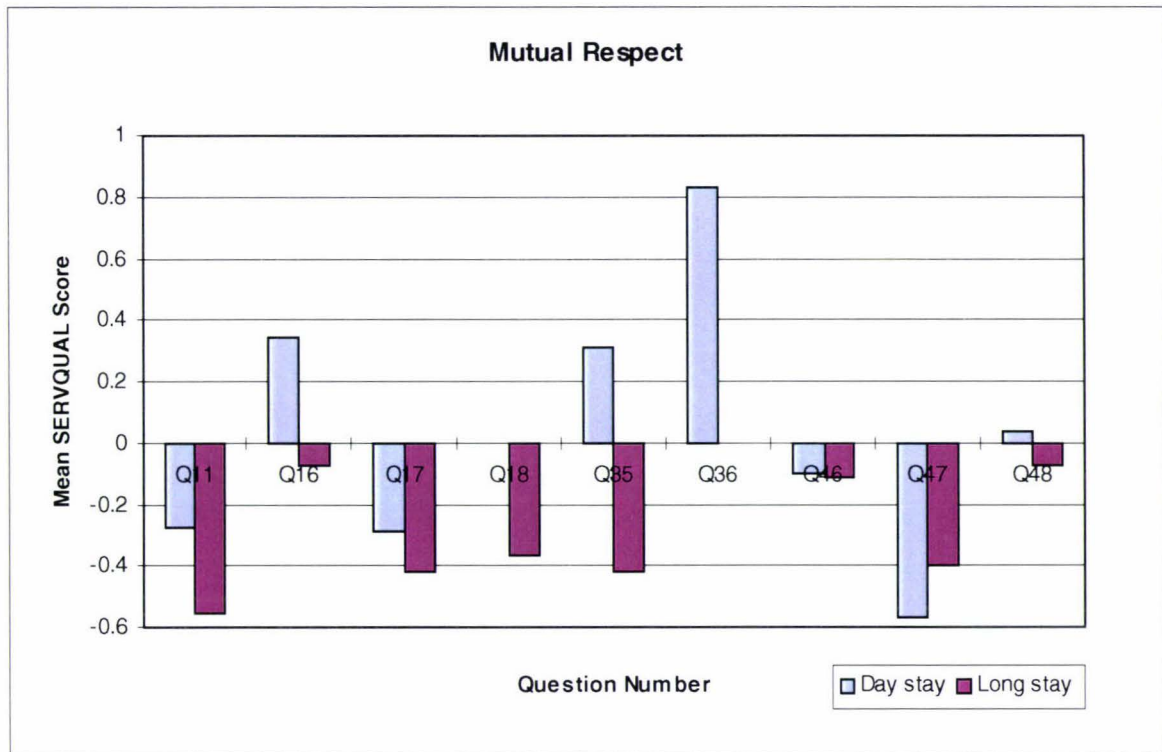
There is a negative tendency of this dimension for 5 of the 10 questions for Long Stay patients as shown in Figure 5-25. Day Stay patients appear to show similar trends. Question 21, *'My doctors should present me with options when deciding on my medical care'* appears to have a rather large negative gap for Day Stay patients which might suggest that options of care should be offered to this group, prior to admission.

The uncharacteristically positive trend with question 34 *'The nurses should spend time talking to me whenever they can'* would suggest that both groups are receive good contact, particularly with nursing staff . This was the largest positive gap for the entire survey.

The three questions with large positive gaps, namely; questions 29, 34, and 38 all relate to being attended to quickly. It would appear that this is being done quite well for both groups. Although both groups are being attended to quickly it would appear from the other negative responses from this dimension, that this attention is not always effective; clear explanations are not always given, options are not given, fears are not alleviated and post hospital care is not well covered.



**Figure 5-26 Mutual Respect Dimension by Length of Stay**



**Table 15 Mutual Respect Questions**

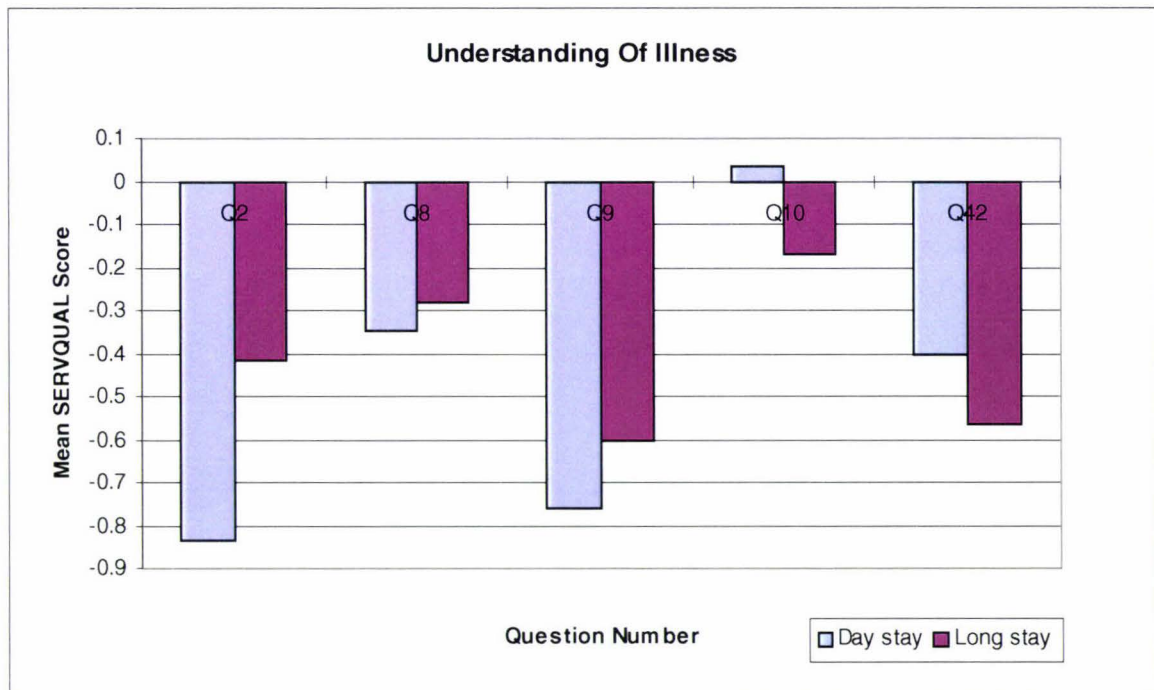
Question Number	Question
11	Doctors should be competent when performing tests and procedures on me.
16	A doctor should not appear to be in a hurry when he is speaking with me.
17	I should have enough confidence in my doctor to discuss very personal matters.
18	The nurses should treat me as a person and not just as a bed number.
35	The hospital should have my best interest at heart.
36	Nurses should be polite when speaking to me and my family.
46	My doctors should treat me with respect.
47	I should be able to place complete trust in my doctor.
48	Doctors should be courteous when speaking to me or my family.

Long Stay patients tend to have larger negative scores for Mutual Respect than Day Stay patients (Figure 5-26). The exceptional score for question 36 '*Nurses should be polite when speaking to me and my family*', stands out. A question order effect has been previously excluded, therefore the assumption is that the nursing staff seem to be performing above expectation, for this aspect, at least for the Day Stay patients.

The two questions namely; question 16 '*A doctor should not appear to be in a hurry when he is speaking with me*', and question 35, '*The hospital should have my best interest at heart*', showed opposing gaps. Day Stay had a good experience with both these aspects, whilst Long Stay patients did not. This may suggest not only a different clinical approach to Day Stay surgery but also a different personnel attitude as well. The outstanding response for question 36 '*Nurses should be polite when speaking to me and my family*' for Day Stay patients might further support this idea i.e. that nursing attitudes are quite different and more positive towards Day Stay care than they are for Long Stay care.

An additional reason for the difference could simply be that Long stay patients were actually in the hospital long enough for the deficiencies to become evident whilst the Day Stay Patients were discharged prior to being exposed to these issues.

**Figure 5-27 Understanding Of Illness Dimension by Length of Stay**

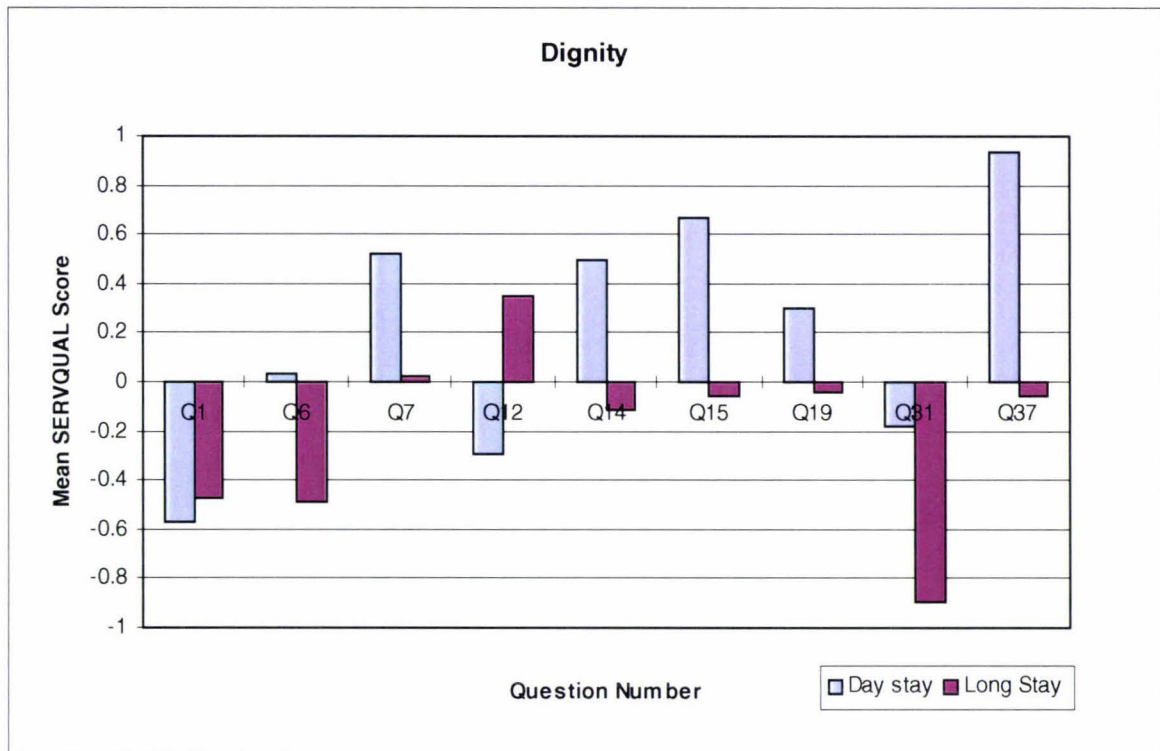


**Table 16 Understanding of Illness Questions**

Question Number	Question
2	Doctors should ensure that I understand my condition and its treatment.
8	Doctors should be very careful to check everything when examining me.
9	Doctors should give me medical advice in language which I can understand.
10	I should have a clear understanding of my current illness during this stay in hospital.
42	Doctors should be very thorough in their dealings with patients.

Figure 5-27 shows this dimension with the same dominant, negative trend for both Long Stay and Day Stay patients. The degree of negativity of the Gaps is disturbing. Neither groups understand their illness nor are the doctors' explanations adequate. The degree of discontent is not greatly effected by the Length of Stay in hospital.

**Figure 5-28 Dignity Dimension by Length of Stay**



**Table 17 Dignity Questions**

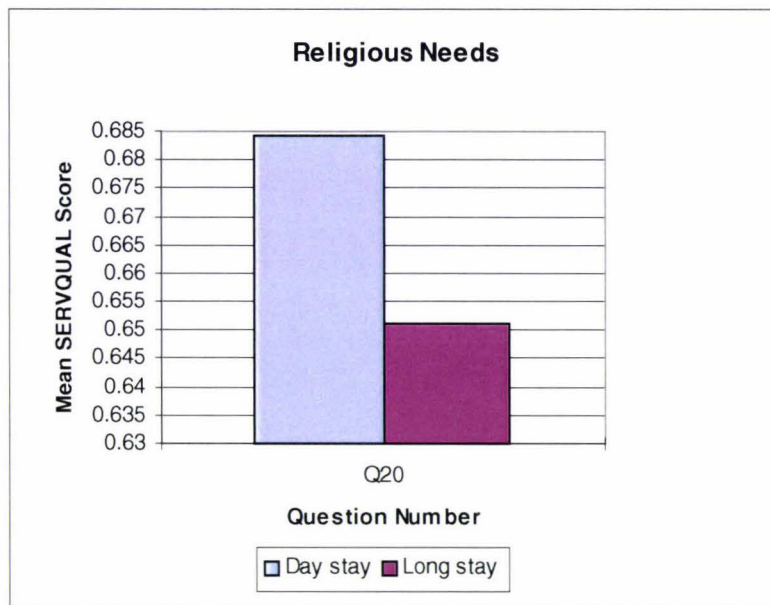
Question Number	Question
1	My doctors should explain the reasons for the tests and procedures which are carried out on me.
6	Nurses should explain any procedures and tests before they are done on me.
7	The nurses should spend time with me discussing my worries regarding my stay in hospital.
12	My doctor should take a real interest in me as a person and not just my illness.
14	Doctors should ask my permission before performing any tests on me.
15	Nurses should ask for permission before performing any procedures on me.
19	I should be treated with dignity and be given privacy during my hospitalisation.
31	Nurses should explain the rules and regulations of the ward to me.
37	Nurses should be kind, gentle and sympathetic at all times.

As with the separation by gender, this service dimension, seen in Figure 5-28 shows the most divergent results of all the dimensions tested. Long Stay patients show generally negative gaps, whereas, Day Stay patients show generally positive gaps. It would appear from these findings that Day Stay patients are being treated with more dignity than Long Stay patients.

The reason for these results are only speculative, however, two possibilities are presented. One is that the patients themselves are finding this type of surgical intervention more palatable and therefore have a more positive approach towards it, alternatively a number of the question responses support those from the Mutual Respect dimension that the nursing staff also have a different approach towards the patients in Day Stay compared with those in Long Stay care.

Further investigation may identify the real reasons for these findings. If the latter alternative is identified then it would seem appropriate to review the approach taken towards the Long Stay care, to ensure that all patients received high quality service.

**Figure 5-29 Religious Dimension by Length of Stay**



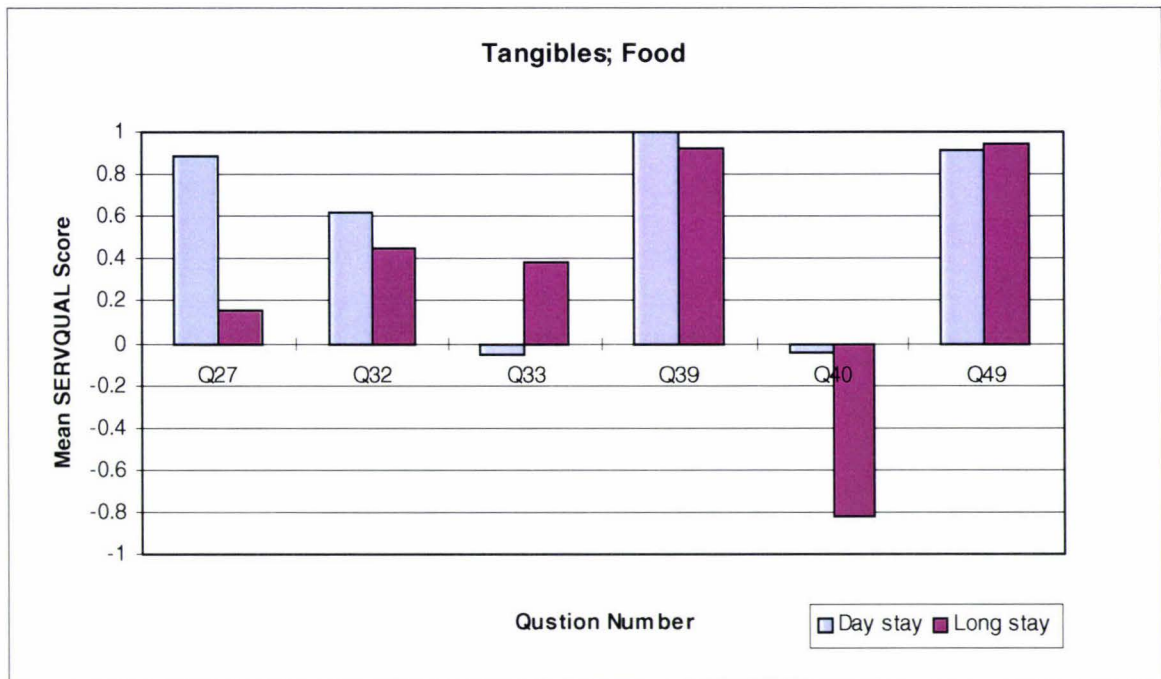
**Table 18 Religious Questions**

Question Number	Question
20	I should have access to religious support of my choice whilst in hospital.

The graph shown in Figure 5-29, does not reflect the real issues behind the responses to the religious question. As identified in a previous section of these results, the religious question had a high number of No Responses and a high number of 7 before and 7 after responses which would suggest that there are two distinct groups; one that does not care for religious needs and the other which cares greatly.

The Day Stay group graph appears have a higher gap score than Longer Stay however both groups suffered from the no response issues described earlier, and therefore, further conclusions need to be made with caution.

**Figure 5-30 Tangibles , Food by Length of Stay**

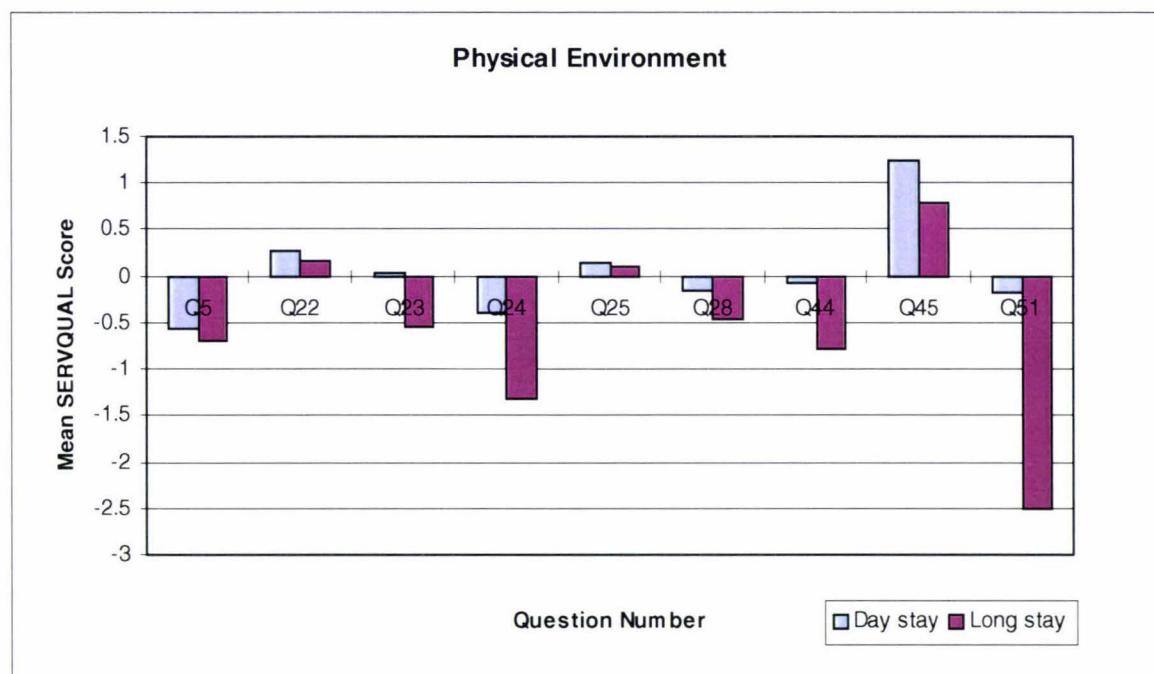


**Table 19 Tangibles; Food Question**

Question Number	Question
27	The meals should be well presented i.e. the food should be nicely arranged.
32	There should be a choice of food on the menu.
33	I should be given the food that I have ordered.
39	I should be asked what size meal I would like.
40	The meals should be hot when they are served.
49	After each meal, the plates should be cleared immediately.

A number of patients in the Day Stay category did not reply to this dimension of the survey however, the general trends can still be seen in Figure 5-30. The organisation exceeds expectation on the food dimension for both groups except for Q 40, ‘*The meals should be hot when they are served*’, where Long Stay patients appear to be dissatisfied.

**Figure 5-31 Physical Environment Dimension by Length of Stay**



**Table 20 Physical Environment Questions**

Question Number	Question
5	The hospital should provide sufficient bathrooms and toilets in the wards.
22	Noises occurring outside the ward e.g. traffic, should be kept to a minimum.
23	At night the noise inside the ward e.g. TV, Staff, Kitchen should be kept to a minimum.
24	The bathrooms and toilets should always be kept clean and pleasant to use.
25	The screens should always be drawn around my bed whenever medical procedures and examinations are carried out.
28	The ward should be well ventilated and always fresh and well aired.
44	The ward should be clean at all times.
45	The ward should be kept well decorated.
51	The beds, pillows and mattresses should be comfortable.

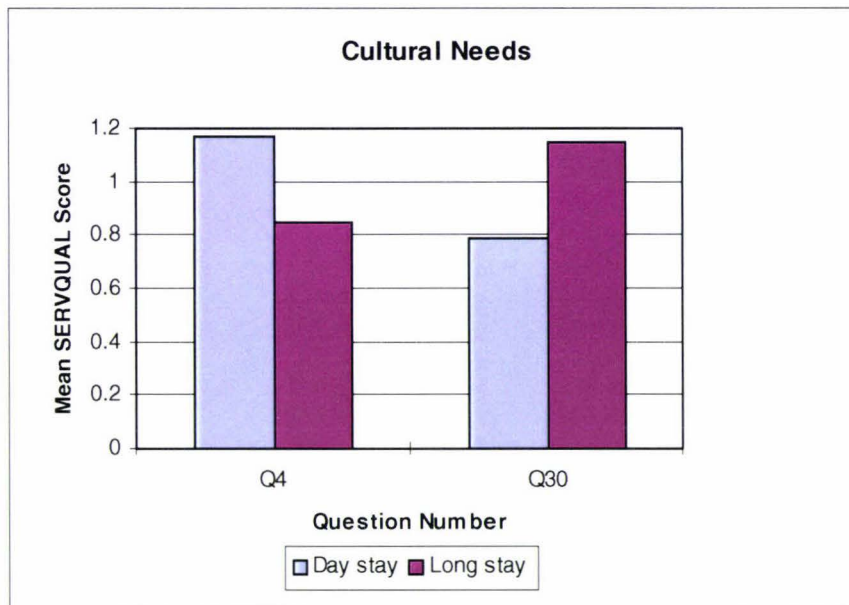
The gaps for this dimension seen in Figure 5-31, appear to be quite small for the Day Stay patients, suggesting that generally the expectation is being met-whereas, for Long Stay



Patients, that does not seem to be the case, with a number of negative gaps evident. The positive gap for Q45 *'The ward should be kept well decorated'* for both Long and Day Stay would suggest that they are more than happy with the decor.

The negative gap for question 51 *'The beds pillows and mattresses should be comfortable'*, the largest negative gap for the entire survey, appears to be affecting Long Stay patients more than Day Stay patients. From the open ended questions it is apparent that a number of people bring their own pillow in to hospital because those offered are too uncomfortable.

**Figure 5-32 Cultural Dimension by Length of Stay**



**Table 21 Cultural Questions**

Question Number	Question
4	The nursing staff should be familiar with any cultural concerns during my stay in hospital.
30	The doctors should be familiar with cultural aspects when treating me.

The cultural response suffers from the same 'no response' issues as does the religious question. However the mean result for those who did reply would suggest that the nurses and doctors are performing above expectation with respect to cultural needs as seen in Figure 5-32.

### **5.11 Summary of the Results**

The results have identified a number of interesting findings regarding the quality of service, both from the questionnaire and from the open ended responses. The SERVQUAL results, by dimension have shown a number of negative gaps in areas of high importance. The open ended responses have generalised the service, at the hospital, sometimes positively, but in a few cases negatively. The demographics have also identified some contrasting service quality trends between patients of different age, gender and by Length of Stay in hospital.

## **6. DISCUSSION OF RESULTS**

The discussion, firstly reflects on the SERVQUAL results, providing options for quality improvement, the statistical approach, the demographics, followed by a discussion of the questionnaire design itself.

### **6.1 SERVQUAL Discussion**

There are two ways to consider the SERVQUAL results. One would be to refer back to the original model and accept that what is being measured is one of five gaps and that by resolving the issues with the other four gaps, that gap 5 should reduce. This is the classical approach and is referred to here as 'Closing Gap 5'. The other approach is to disregard the model and undertake quality improvement projects simply to address the issues in the Gap 5 results.

The former approach addresses the outcomes of the survey in a much more global, company wide manner, looking at the underlying themes rather than specific issues relating to individual questions. Most of these themes are intangible and perishable and therefore difficult to resolve. Using the latter approach which looks simply at individual questions is much easier to understand, however the underlying causes for some of the problems may never be elucidated. A combination of both of these strategies would seem the best option in order to improve the service quality to the patient on a long term basis.

### **6.1.1 Closing Gap 5 Approach**

The Parasuraman, Zeithaml and Berry model is designed to measure is Gap 5 of i.e. The difference between the patient's expectation and perception of service they received. The model suggests that in order to close this gap, it is necessary to resolve the issues associated with Gaps 1,2,3 and 4. Thus the main focus is on reducing the four company gaps and Gap 5 should reduce, without the need to focus on each of the specific survey questions.

#### **6.1.1.1 Closing Gap 1**

This involves closing the gap between the patient's expectation and the hospital staff perception of that expectation. Given the technical nature of healthcare delivery and the degree to which the patients are excluded from decision making, it is possible that Gap 1 could be quite large. Parasuraman et al. (1990), describe a number of approaches that may reduce Gap 1. These include; identification of the patients' expectation, increase the interaction between management and customer / patient, increase upward communication between the customer contact personnel and management and reduce the number of levels between the customer contact personnel and the management.

Within healthcare, there also needs to be the recognition that the patient as the primary customer, as discussed earlier - without this recognition it is always going to be difficult to bridge the gap between the patients expectation and their perception.

#### **6.1.1.2 Closing Gap 2,**

This gap is concerned with not selecting the right service design standards. i.e. having identified what the patients expect, the systems need to be designed to meet those expectations and the standards of those designs need to be appropriate.

Parasuraman, Zeithaml and Berry (1990) describe those companies which are successful as those who set customer focused goals that are in line with the customers' expectations.

### **6.1.1.3 Closing Gap 3**

This is the service performance gap. Where the organisation does not do what it has specified that it will do. Some of the reasons for this include: employees who are unable or unwilling, variation in the customer mix which makes standardisation of the process inappropriate and a failure to match supply with demand. This project has identified instances where the hospital staff have been unable or unwilling to close the gap. The negative scores on the Empathy and Mutual Respect dimensions are examples of this.

The project has also identified a number of examples of variation in the customer mix, that may effect the ability to standardise care. Examples include:

- a. Age, where differences exist between the under 60 and over 60 age group.
- b. Gender where differences exist between males and females, and
- c. Length of Stay, where differences exist between Day Stay and Long Stay patients.

### **6.1.1.4 Closing Gap 4**

This gap occurs when promises from the organisation do not match what is delivered. In other words the organisation does not do what claims that it is going to do. Reasons for this gap include; over promising, failure to educate patients, and inadequate communications within the organisation resulting in the wrong thing being promised. The likely places where promises are mentioned, would be in promotional material or quality management information, held by the hospital. In addition the hospital may not be adequately explaining anything to the patient with regards to the quality of the service that they should expect.

### **6.1.1.5 A Practical Example of the Application of the Gap Reduction**

To describe an example of how to apply this thinking to this project, an examination of the food related questions show that patients appear to be happy with the size of the portions but according to question 40, the “food is not hot when it is served”. The need exists to make sure that the food is still hot when it is given to the patients.

#### Closing Gap 1

The first thing to identify is customers expectation with regards to hot food. Is this expectation the same as what the hospital staff think that they expect? Do patients want food at the same temperature as they have at home? What is that temperature? Does the hospital have an understanding of this patient expectation? Patients will have to be asked what they actually mean by hot food.

#### Closing Gap 2

The next step is to define the design standards. Hypothetically, the standard chosen could be that the temperature of the food should be between 50 °C and 60 °C when it is delivered to the patients bed side. The hospital staff need to review both the production process and the delivery process and apply some standardisation to those processes to ensure that the optimum temperature can be maintained

#### Closing Gap 3.

Having improved the system for the production and / or delivery of the food, the obligation is now there to maintain that standard. So a measuring process needs to be employed to ensure that this occurs. In this instance this could be in the form of a physical measurement

that is taken at a specific time or alternatively it could be that patients are canvassed to ensure that they are now happy with the temperature of the food.

#### Closing Gap 4

Perhaps not so important for this example but; what is the organisation claiming that it is providing in the way of food, how is it presented, what size are the portions and how hot is it? Before this is stated, there is the need for the management to make sure that they fully understand what the patients want and that they have systems, standards, the capability and measurement techniques in place that can meet those needs, otherwise Gap 5 will still exist. Avoid over promising. This will be of no benefit to anyone.

This simple example was chosen because it would be relatively easy to implement. However some of the more intangible results from the survey will be more of a challenge.

#### **6.1.1.6 Important Service Dimensions**

The service quality dimensions; Understanding of Illness, Mutual Respect, Dignity and the Physical Environment, followed by Empathy, stood out as the important quality dimensions. The large number of negative SERVQUAL scores would indicate that this hospital is not performing up to expectation in any of those dimensions except the Dignity dimension where some results appear satisfactory.

The only dimension where the hospital does perform well is in the area of provision of food which does not rate highly in order of importance, as far as the patients are concerned.



#### **6.1.1.7 Understanding of Illness**

The most important dimension which also had an overall negative SERVQUAL score was the 'Understanding of Illness' dimension. This is a challenging and complex issue that may require a number of approaches before the negative tendency of the scores can be resolved.

The JCAHO have recently identified patient education as one of the corner stones of customer satisfaction (Gaynor and Patyk, 1998). Improving the customers understanding of the technical aspects of the care delivery in particular would have the effect of reducing the barrier between the technical and functional aspects of the service delivery. This project has identified that doctors in particular need to take more care with this issue.

It is worthwhile examining this dimension using the same system thinking, as for the food example previously described.

There is a need to identify what the customers expect in the way of understanding of their illness? How should the organisation go about designing a standardised process to educate patients to that level of expectation? How should the organisation then measure that the education process is effective? Finally what is the organisation claiming that it is providing in the way of patient assistance to understanding their illness better? This would indeed be a challenging project.

#### **6.1.1.8 Mutual Respect**

This is another example of a vague dimension, with similar results as for the Understand of Illness dimension, but still one which requires an improvement.

From the SERVQUAL results nurses appear to provide the service with good mutual respect whilst the negativity is directed largely towards the relationship between the doctor and the patient. It would also appear, from the open ended responses, that both staffing

numbers and respect from other patients was a concern. There clearly needs to be a greater understand of the patient expectation of Mutual Respect followed by a company wide approach to improve this aspect of care.

#### **6.1.1.9 Other Dimensions**

The same investigative process could be undertaken to resolve the Gap issues identified for the other service dimensions. The success of any initiatives could be measured by undertaking further studies using the same survey on a longitudinal basis.

### 6.1.2 Resolving Quality Issues by Individual Question

Analysing the individual question results, and then designing improvement programmes based on these individual questions, is the other option for making use of the survey results. To some extent the gap model is disregarded. While this may appear to be an easier approach, it may not resolve the underlying issues causing the difference between expectation and perception gaps.

The recommended approach would be to develop quality improvement projects based on the worst results from the weighted mean scores shown in Figure 5-8. Firstly the hospital management will have to decide what they consider to be acceptable weighted means. An arbitrary weighted mean of minus 2 might be considered adequate.

The worst result, which could be the first quality improvement project, was question 51 '*The beds, pillows and mattresses should all be comfortable*'. The next project should be based on question 24 '*The bathrooms and toilets should always be kept clean and pleasant to use*'. Question 41, '*My doctors should discuss my post hospital care with me*' is next, and so on from right to left of Figure 5-8 until acceptable weighted means are encountered. Probably question 47 could be the last area to attempt an improvement, from this set of results. This approach would require 15 different projects all of which would need to be successful to move all the weighted means to above the minus two level.

Concurrently an analysis could be undertaken of the high positive weighted means as seen in Figure 5-7. It is possible that the hospital is over specifying or over doing some aspects of care and potentially wasting time and money in those areas.

The SERVQUAL results provide insight into the customers views of the service, from an unfamiliar angle. Some of the dimensions appear to be rather vague e.g. Empathy or Mutual Respect whilst others are more tangible and easier to comprehend e.g. the Physical

Environment and Food. The entire project will only be effective if the results of the survey from all the dimensions including the, difficult ones, can be transformed into quality improvement initiatives and gap 5 can be reduced i.e. SERVQUAL will only be useful if the results from the survey can be utilised in a practical manner.

Some of these improvements will be simple, tangible and obvious e.g. The development of a brochure for the ward that outlines the needs for mutual respect between patients and between the hospital and the patients. Other initiatives however, may require complex process re-design and detailed analysis of the reasons for the existence of the gaps.

## 6.2 Statistical Approach

The intention of the statistical calculations was mainly to establish, by factor analysis, that the service dimensions for this sample frame were the same as for the Tomes and Ng research. In addition there may have been the possibility to reduce the size of the questionnaire, without compromising its validity. Unfortunately the small sample size has only permitted a preliminary investigation of this aspect of the project. Appendix 5 shows two attempts at the factor analysis. One using the six factors and a Equimax rotation and the other using principle components analysis to identify high eigenvalues on which to base a factor analysis with 12 factors and a Varimax rotation. It would appear from these results that the dimensions are going to differ from those identified by Tomes and Ng. From a practical point of view, the application of the questionnaire as it is still sound. I.e. Just because the factor analysis has not been convincing, does not mean that the results are no good. They are still a very good foundation of quality improvement at this hospital.

### 6.2.1 Closed Questions Versus Open Questions

The relative value of open versus closed questions within social research has remained unresolved for many years. In fact very little research has been undertaken to challenge the theory that one is superior to the other (Schuman and Presser, 1996). Open ended questions allow for the expression of attitudes not available within the closed question framework, whilst closed questions may be better for data collection, pre-coding and analysis (including costs and time). The SERVQUAL tool course requires closed questions however an open ended option was provided

As far as this project has been concerned, the open ended responses were often positive but vague e.g. *'the care was excellent'* or they were negative and described a specific clinical incident. On a number of occasions the open ended responses contrasted with the SERVQUAL responses, with a positive open response yet a negative SERVQUAL response. It is speculated that the open ended responses are being effected by the eventual positive outcome of the surgical procedure, in most cases. I.e. the patient got home they were well and therefore the care must have been good – whereas the closed responses provide more specific and useful quality improvement information regarding the actual processes which occurred during their stay in hospital.

Despite all the positive comments, a number of negative comments were received. Some specified particular clinical events which may have been significant enough to warrant the submission of a formal complaint. These clinical comments have not been included in this document. It is unfortunate a small number of negative comments can have such an impact. Some specific quality improvement opportunities have been identified from these comments. These opportunities were not identified from the SERVQUAL components of the survey.

### **6.3 Demographic Results**

A number of interesting results came out of the demographic section of the questionnaire.

#### **6.3.1 Age Differences by Gender**

The average age for female respondents was approximately 12 yrs younger than for males. This is likely to be related to different clinical conditions that require different surgical procedures, however, no such clinical information was obtained to support this suspicion.

#### **6.3.2 Importance Ratings Higher for Females than for Males**

Females gave consistently higher importance ratings to the individual questions than males. This trend increased slightly with age for females whereas it decreased for males. Those questions where the importance gap between males and females, was the widest were in the intangible dimensions such as Empathy, Dignity and Mutual Respect (Figure 5-21 and 5-22). Striking differences were obtained from the SERVQUAL scores from the questions where the two genders have scored quite different importance ratings (Figure 5-23).

#### **6.3.3 Cultural Concerns**

Using the questionnaire to identify cultural attitudes and concerns has not been successful because few Maori respondents replied to the survey. This is not a reflection of the inadequacy of SERVQUAL. More specifically, it would suggest that the questionnaire approach is an unsuitable means of obtaining good reliable information from this group. A better approach to identify the concerns of the minority groups may be to conduct face to face interviews or focus groups amongst the minorities.

As reflected in the open ended comments, cultural, or other concerns should not be allowed to compromise patient care, or impact on the mutual respect shown towards other patients.

It was noteworthy that a small number of respondents chose to call themselves New Zealanders rather than Caucasians although this provided nothing useful to the project. As discussed, Maori response to the survey was too small to be of any use.

#### **6.3.4 Results by Length of Stay in Hospital**

There are only 9 out of 51 questions where Long Stay patients showed a positive gap i.e. where their expectation was exceeded. There are 16 out of 51 instances when Day Stay patients showed positive gaps. There are only two questions (questions 12 and 29), where Long Stay has a higher positive gap than Day Stay.

Day Stay and Long Stay patients had differing results especially for the Dignity and Mutual Respect dimensions where Day Stay were generally more than satisfied and Long Stay were dissatisfied. The trends for the Physical Environment dimension were the same for both groups but the degree of negativity for Long Stay was more extreme than for Day Stay. Positive gaps were seen for both groups for Empathy questions relating to contact with staff. The only dimension where the hospital performed to expectation for Long Stay patients was with the food dimension with the only negative score being that the food is not served hot.

Both the nursing staff and the doctors appear to respond differently to the Day Stay environment than to the Long Stay environment as seen by the dignity dimension separated by Length of Stay in Figure 5-26.

It is accepted that there are only 30 Day Stay responses and 53 Long Stay responses and because of the small sample size these results should only be considered as preliminary.

#### **6.4 Questionnaire Design**

The questionnaire approach has resulted in a large quantity of data being returned, making coding a lengthy and time consuming process (approximately 250 data points for each



respondent). This data collection has occurred over a six month period. Ideally a larger sample size would have been preferred, to provide a better statistical basis for the conclusions. This would have been even more time consuming. The advantage of this approach over others, however, has been that not great skill is required in obtaining and collating the data. In contrast, if face to face interviews had been conducted, skilled interviewers would have been required, as would formally structured questions, using a standard approach, for all interviews. There may be merit in conducting such interviews with respondents who have provided particularly useful service quality information as part of the questionnaire. Better quality improvement outcomes may be possible with such detailed feedback.

The concept of an audit of the entire elective surgical population, rather than random sampling from the population, did not pose any problems, in fact the administration of the survey to every elective patient became routine, once the necessary processes were in place. Confidentiality was not an issue, with the hospital staff managing the administration of the questionnaire. No clinical information was requested although some would have been useful to explain some of the different gender and age responses. It is speculated that some of these differences are purely clinically based.

A number of issues relating to specific question wording caused problems. In particular the lack of a "Don't Know" option meant that in many instances questions went unanswered. Two questions (questions 19 and 51) had dual meanings which raised potential ambiguities. Further specific details pertaining to the construction of the questionnaire itself are included in the recommendations of this report. Most of the changes are only minor but should improve the overall readability of the survey tool.

#### **6.4.1 Questionnaire Bias**

There may be an issue of bias related to the effect that seasonal trends or fluctuating demands have had on the type of elective operations conducted over the survey period. This may have effected the type of patients who have completed the survey and thus a bias may exist. The extent of this effect is unknown.

A number of effects which are inherent within questionnaires themselves, were also recognised and considered (section 53 – 5.6). These include effects such as; question order effects, response effects, scale anchoring effects, no response bias, and missing data. These were not thought to be significant, with the exception of a potential response effect, with two of the questions (question 19 and question 51) with dual meanings, and the ‘no response’ effects associated with both the religious and cultural questions.

#### **6.4.2 Response Rate**

Initially it was thought that the response from this sample frame would be higher than normal, but this has not been the case. The response rate has been no different than for other research. The lower than expected response rate means that there are only enough results to undertake a provisional analysis of the construct validity of the survey tool, using factor analysis. It was intended that undertaking construct validity would be a feature of this research, unfortunately that has not been possible.

The alternative approach undertaken was to use the existing quality dimensions, presented by Tomes and Ng. In practical terms, this has been adequate; the results have been categorised by dimension and conclusions drawn, but in a statistical sense, those categories have not been fully validated for our sample frame.

Generally, the results are still useful, however, some of the questions may be inappropriately located within the dimensions used. In addition the statistical analysis may have enabled a

reduction in the length of the questionnaire without a reduction in its usefulness. Unfortunately this is still unknown because the appropriate statistical analysis was not effective on such a small sample group.

The lower number of replies has also limited some aspects of the SERVQUAL and demographic analysis as well. In some cases only provisional conclusions have been possible with the recommendation that further data collection be undertaken to substantiate the comments.

#### **6.4.3 Selection of the Sample Group**

The selection of the sample group caused an unexpected delay. This occurred because not all hospital managers approached had the same level of enthusiasm for the application of SERVQUAL, as did the researcher. One group approached claimed to be undertaking an existing quality programme which involved patients and alternative techniques. The other group approached were unhappy with potential conflicts that the survey results might create between the patients and doctors or between the hospital staff and the doctors. The Ministry of Health personnel had no obvious national strategy to support the Governments policy relating to service quality and customer focus and therefore they were also of little assistance.

#### **6.4.4 Customers as Work In Progress?**

Despite the requirements from the Minister of Health, that patients will be central to the service equation, it became apparent early in the project, that this is not always the case. There appeared to be differences in the relationship between the health providers and the patients at different hospitals. Not all hospital managers seem to want to know what their patients think, particularly if this conflicts with what the doctors want. It would appear that

the balance between the health funder, service provider and the patients is currently uneven with the primary focus on satisfying the needs of the Health Funding Authority with the patients often being treated as '*work in progress*' and not as primary customers. This would appear to be in conflict with the requirements of the government's own wishes and warrants further investigation.

It was refreshing to note that the provincial hospital chosen for the project did specify in their business plan that patients are the primary customers. The challenge exists then for that hospital to utilise the results from this project to effect better service quality for their patients.

## **7. CONCLUSIONS**

The conclusions are separated into sections namely; SERVQUAL results, statistical results, demographic results, survey design and finally any other general comments.

### **7.1 SERVQUAL Conclusions**

The service dimensions originally described by Tomes and Ng (1995) were used for the interpretation of these results. For reasons explained previously, it was not possible to formulate dimensions specific to this sample frame.

#### **7.1.1 Service Dimension Importance Conclusions**

The service dimensions ranked by order of importance, for our sample frame, were as follows: Understanding of Illness, Mutual Respect, Dignity, Physical Environment, Empathy, Food, Cultural and Religious Needs.

#### **7.1.2 Service Dimension Gap Conclusions**

The SERVQUAL results provide insight into the customers views of the service, from an unfamiliar angle. Some of the dimensions appear to be rather vague e.g. Empathy or Mutual Respect whilst others are more tangible and easier to comprehend e.g. the Physical Environment and Food. This project will only be of value if the results of the survey from all the dimensions including the, intangible ones, can be transformed into quality improvement initiatives and Gap 5 can be reduced. SERVQUAL by itself is only a measurement tool. It is not the process nor should it be the outcome, instead it should provide a measure of both.

Some of these improvements will be simple, tangible and obvious e.g. The development of a brochure for the ward that outlines the needs for mutual respect between patients and between the hospital and the patients. Other initiatives however, may require complex process re-design and detailed analysis of the reasons for the existence of the gaps.

The “Understanding of Illness” dimension (section 5.7.3) had a consistently negative score across the entire dimension, implying that there is a significant lack of understanding of the clinical situation by patients, despite their desire to want to know what is happening.

For the “Mutual Respect” dimension (section 5.7.4), the scores are also generally negative (with two exceptions). A feature of the negative scores were those which involve doctors. The exceptional question for this dimension was that nurses are acting in a polite manner when speaking to patients or relatives.

The “Dignity” dimension (section 5.7.5) had a mix of results; some very good, some not so good. Nurses generally appear to be delivering service in a gentle and kind manner. However neither nurses nor doctors appear to be explaining fully, the tests and procedures that are to be carried out on patients. The explanation of the rules and regulations of the ward is not adequate.

There is generally a negative trend for “Physical Environment” (section 5.7.6), the next most important dimension. The most negative gap for the entire survey, question 51, regarding the comfort of the bedding, lies within this dimension. A disturbing result is question 24 which identified that the cleanliness of the toilets, was not up to expectation. The question in this dimension which contrasts with the overall negative trend, was question 45, which related to the decor in the ward – where generally the patients appear to be more than satisfied.

The next most important service dimension was the “Empathy” dimension (section 5.7.7). This shows a mixed set of gaps. The positive gaps, implying good service, relate to speed of

attending to people by both doctors and nurses. The negative gaps, implying inferior service, relate to the quality of the contact between patients and doctors. Doctors need to show more empathy and in particular need to explain post hospital care better to patients.

The last of the important dimensions related to the “Tangibles; Food” (section 5.7.8). Here the service appears to be more than adequate except that the food does not appear to be hot enough when it is served. The trends in importance of food differ both by gender and age. For males the importance of food decreases with age whereas for females the importance of food increases with age.

As discussed previously, the questionnaire approach has been an inappropriate means of obtaining cultural information from patients, particularly Maori patients (section 5.7.9). It would seem unnecessary to continue with the cultural questions in the questionnaire, provided that ethical acceptance is obtained.

The “Religious” dimension (section 5.7.10) separated the sample frame into two distinct groups. One which does care not about religious issues and the other which expected a great deal. The challenge will be to develop a programme to satisfy one group (those who require religious contact) without offending the other (those who do not require religious contact).

### **7.1.3 Weighted Mean Scores**

The large positive weighted means (section 5.7.2) imply that there are specific questions where the perception of the service received by the patients exceeded their expectations – in areas of relative importance. Contrasting this, however, the large negative weighted means imply that there were just as many instances where their perception of the service did not exceed what was expected – also in areas that were important.

The negative weighted mean gaps appear to be related to either tangible issues within the ward or to the approach that doctors take towards patients. Both aspects are opportunities for quality improvement.

An assessment of the positive weighted scores is also necessary to ensure that the service is not being over specified and that neither money nor time are being wasted.



## **7.2 Statistical Approach**

The statistical approach has only been partially successful because of the small sample size. It would appear from the preliminary results that the service quality dimensions for this sample frame may be different from the Tomes and Ng group, however further data collection is required in order to prove this. It has been suggested that up to three times the number of questions i.e. 150 replies may be necessary before the factor analysis will work well.

### 7.3 Open Questions

Some benefit has been gained from the open responses. Some improvement opportunities were identified from these responses that were not identified by the SERVQUAL questions. These have been included in the recommendations as specific quality improvement possibilities.

In some instances the open responses have contrasted with the SERVQUAL responses, which raises an interesting insight into the way the respondents approach the two forms of data collection. It is speculated that the open responses are sometimes effected by the final medical outcome and are sometimes too global. In this instance they should only be included to provide support to the closed SERVQUAL responses, rather than being a primary source of information.

What may be possible, after more data collection, is some sort of triangulation or association between the dimensions and the two techniques being used i.e open and closed questions. There may be consistently different responses between the two methods. There may be differences by demographic group. Some sort of association diagram may be of benefit for future quality improvement initiatives. An example of this would be where respondents describe the care as inadequate in the open responses. This by itself is difficult to resolve, however, there may be a direct relationship between this comment and the contact with nurses, thus precipitating the comment. Therefore resolving the contact with nurses may change the overall perception of the service and therefore improve the open ended comment.

From a quality improvement perspective, the closed responses are an easier way to monitor specific ongoing improvement, if the questionnaire was used on a longitudinal basis as a measurement tool. If necessary open responses could be turned into closed questions and included in the questionnaire although no instances requiring this were immediately evident.

## **7.4 Demographic Results**

The demographic results provided more useful information than was expected.

### **7.4.1 Results by Gender**

When the results were separated by gender, it became evident that there was also a separation by age, with a lower mean age for females than for males. The age difference has had minimal impact on the results, however, the separation by gender may be more significant. This assumption may alter with more data collection.

### **7.4.2 Importance Ratings Higher for Females than for Males**

Females appear to find the intangible dimensions namely; Empathy, Dignity and Mutual Respect more important than males. In addition, the SERVQUAL Gap scores indicate that females are dissatisfied with this aspect of care whilst males appear satisfied. Alternatively, males, particularly young males, appear to consider that food is more important than do females. These finding suggests that the two genders have quite different attitudes and expectations towards hospitalisation. Females appear to be more sensitive to the soft intangible dimensions whilst males do not appear to be so interested in such issues. This should impact on differences in the approach that the nursing and medical staff take towards patients. The style of care needs to be different for females than for males.

### **7.4.3 Results of Ethnic Identity**

The ethnic identity component failed to produce anything significant except that a small number of respondents chose to call themselves New Zealanders. As discussed, Maori response to the survey was too small to be of any use. This written survey approach appears to be an ineffective way of obtaining cultural information.

### **7.4.4 Results by Length of Stay in Hospital**

It has been worthwhile splitting the sample frame by Length of Stay. A number of differences have become evident even in this small sample, particularly for the Dignity and Mutual Respect dimensions. Day Stay patients appear to be satisfied with both aspects of care whereas the Long Stay patients are dissatisfied. Day Stay patients appear to have more extreme opinions of their care than Long Stay patients.

There are suggestions, from the findings, that there is a different staff attitude towards patients from the Long Stay and Day Stay situations. It would appear as though staff are more satisfied with the latter than the former.

## **7.5 Questionnaire Design**

The style of the questionnaire (a two part questionnaire) has caused few problems and should be retained for further use. A number of questions could be omitted after ethical approval (specifically the cultural questions). Other questions could be slightly re-worded to improve the overall readability, as outlined in the recommendations.

Auditing the entire elective surgical group was straight forward, thanks to the input from the hospital staff, who assisted with the administration of the questionnaire.

Some basic clinical information would have been useful to enable a better analysis of some of the demographic differences which have become evident. E.g. the difference in age between genders is possibly related to the different types of elective surgery required. Alternatively, it could simply be reflecting a poor response form young males. Confidentiality could still be maintained if the present system of data collecting was employed.

### **7.5.1 Questionnaire Bias**

Questionnaire bias was not thought to be a significant problem however further data collection and some slight question re-wording would be appropriate, in order to investigate this issue further.

## **7.6 The Sample Group**

The sample group eventually chosen for the research was too small to enable the collection of sufficient responses, over the research period, to be able to fully conduct the statistical analysis of the questionnaire construct validity. Despite this, some very useful quality improvement information has been obtained from both the SERVQUAL replies, demographic information and the open ended responses.

## **7.7 Patient, Hospital, Health Funding Authority Relationship**

It was not intended that the relationship between these components of our health care sector would be researched in detail, during this project. However, it became apparent, when attempting to identify a suitable sample frame, that the relationship between these three groups is not always equal. The primary focus in some instances seems to be between the hospital and the HFA, with the patients being treated merely as '*work in progress*'. The hospital which was finally chosen for this research, did actually state in their business plan, that patients are their primary customer.

### **7.7.1 The Value of SERVQUAL**

The purpose of this project was to assess the usefulness of SERVQUAL, as a tool to measure service quality, from the patients point of view, in New Zealand public hospital. Despite the fact that the sample size is smaller than was expected the tool itself still shows promise as one of a small number of mechanisms available for measuring service quality.

The real value will be gained by using the tool on an ongoing basis.

It must always be appreciated that the SERVQUAL results are a measure of the effect that the organisations processes have, on their customers. It is therefore up to the organisation to improve its processes rather than trying to attribute the blame for the gap onto the customer. I.e. don't blame the customer for the gap, blame the organisation and the processes and systems within that organisation.

## **8. RECOMMENDATIONS**

A number of recommendations can be made from the research results and subsequent discussion and conclusions.

### **8.1 Longitudinal Application of the Survey Tool**

It is recommended that the longitudinal application of this model be assessed in a medical environment. Ideally the project should continue at the current location. The model should show changes in patients responses over time, as improvements occur. This is considered to be one of the valuable applications for SERVQUAL.

### **8.2 The Approach to Quality Improvement from the Questionnaire**

The approach to quality improvement opportunities identified by this project comes from three different areas. One which involves improvement by entire service quality dimension, another which involves quality improvement by individual question, as identified by the weighted men responses, and finally improvement opportunities identified by the open ended responses.

#### **8.2.1 The Approach to Quality Improvement from the SERVQUAL Responses**

Quality improvement projects identified by the SERVQUAL results should commence with those service dimensions which scored consistent negative gaps and at the same time, were considered relatively important. These include Understanding of Illness, Mutual Respect, the Physical Environment followed by Empathy. To a lesser extent the Dignity and Food dimensions should be addressed.

### **8.2.2 The Approach to Quality Improvement from the Weighted Mean Responses**

Concurrent quality improvement projects should also be undertaken by addressing the individual questions which had the largest negative weighted mean scores. These include the following questions ranked by degree of negativity; 51, 24, 41, 21, 9, 5, 31, 3, 2, 40, 42, 44, 1, 11, and 47. In some instances these will be individual projects but in others one project may cover a number of questions.

### **8.2.3 The Approach to Quality Improvement from the Open Ended Responses**

The following quality improvement opportunities were identified from the open responses:

- a. Evaluation of the discharge procedure. The evidence from one of the clinical comments would suggest that the discharge procedure, including continuation of care, needs to be reassessed. This could include some sort of focus group programme.
- b. Development of an Information Sheet for the ward, outlining obligations and expectations from both parties.
- c. A review the name tags to make them clear and visual.
- d. Informing the staff of both the positive and negative comments from the project would both encourage and surprise some employees.
- e. Canvass ethnic responses from Maori participants by focus group or face to face interviews rather than by questionnaire.



### **8.3 Construct Validity**

It is recommended that the construction of the questionnaire be validated, in a New Zealand public hospital. This could be done by continuing with the data collection at the current site or alternatively it could be undertaken in a centre with a higher throughput, and therefore could be completed in a shorter time frame.

### **8.4 Demographic Information**

It is recommended that the demographic section of the questionnaire, excluding the ethnic component, be retained. Age appeared to have minimal effect on the results, however, further data collection may change this view.

### **8.5 Questionnaire Re-Development**

The following modifications to the questionnaire are recommended in order to improve its readability – and to minimise potential design effects:

- a. The inclusion of a ‘Don’t Know’ option with each question may alleviate the confusion with some questions.
- b. The re-writing of question 19 and possibly question 51 may resolve the counterarguments or dual meanings within those questions.
- c. There is a need to be more precise with the wording of many questions which will improve the overall readability of the construct. Any significant changes need to be pre-tested with the patients, to ensure that the modifications make sense.
- d. The inclusion of an open ended component was valuable and should be retained.
- e. The matrix design should be retained to avoid scale anchoring effects.
- f. There needs to be a specific questionnaire for Day Stay patients. The current questionnaire should just be used for Long Stay patients.

## **8.6 Patient Satisfaction Approaches**

Further research into other effective quality measurement tools used within the health sector is warranted. This maybe difficult to undertake because of the reluctance in many health providers, to divulge the strategies they use. However, in the interests of quality improvement, such a project would be useful.

## **8.7 Patient, Health Funding Authority, Health Provider Relationship**

Further investigation is warranted into the attitudes that healthcare professionals have regarding the relationship between patients, the HFA and the healthcare providers. It is suspected that it is not a simple matter to place the patient in the position of being the primary customer of our healthcare system.

## **8.8 Recommendation Summary**

The SERVQUAL tool has been used to identify a number of gaps between the patients expectations and perceptions of the service that they received from this hospital. From the results, a number of quality improvement projects have been identified. Recommendations for improvement projects and the ongoing use of SERVQUAL, as a measurement tool, have also been made. Hopefully, the service to patients will improve and SERVQUAL will be used in an ongoing fashion to measure those improvements.

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## **11. APPENDICIES**

Appendix 1: Part 1 of the Questionnaire

Appendix 2: Part 2 of the Questionnaire

Appendix 3: Supporting Documentation

Appendix 4: Ethics Approvals

Appendix 5: Factor Analysis

## 11.1 Appendix 1 Customer Service Questionnaire Part 1

### HOSPITAL

#### CUSTOMER SERVICE QUESTIONNAIRE: PART 1

	Strongly Disagree							Strongly Agree							Not Important							Very Important						
1. My doctors should explain the reasons for the tests and procedures which are carried out on me.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2. Doctors should ensure that I understand my condition and its treatment.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3. Doctors should spend time with me discussing my fears and concerns about my condition.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4. The nursing staff should be familiar with any cultural concerns during my stay in hospital.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5. The hospital should provide sufficient bathrooms and toilets in the wards.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6. Nurses should explain any procedures and tests before they are done on me.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7. The nurses should spend time with me discussing my worries regarding my stay in hospital.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8. Doctors should be very careful to check everything when examining me.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9. Doctors should give me medical advice in language which I can understand.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10. I should have a clear understanding of my current illness during this stay in hospital.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11. Doctors should be competent when performing tests and procedures on me.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12. My doctor should take a real interest in me as a person and not just my illness.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

13. Even if the doctors cannot cure me right away, they should make me feel more comfortable.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
14. Doctors should ask my permission before performing any tests on me.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
15. Nurses should ask for permission before performing any procedures on me.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
16. A doctor should not appear to be in a hurry when he is speaking with me.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
17. I should have enough confidence in my doctor to discuss very personal matters.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
18. The nurses should treat me as a person and not just as a bed number.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
19. I should be treated with dignity and be given privacy during my hospitalisation.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
20. I should have access to religious support of my choice whilst in hospital.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
21. My doctors should present me with options when deciding on my medical care.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
22. Noises occurring outside the ward e.g. traffic, should be kept to a minimum.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
23. At night the noise inside the ward e.g. TV, Staff, Kitchen should be kept to a minimum.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
24. The bathrooms and toilets should always be kept clean and pleasant to use.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
25. The screens should always be drawn around my bed whenever medical procedures and examinations are carried out.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
26. Doctors and nurses should involve me when making plans regarding my medical care.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
27. The meals should be well presented i.e. the food should be nicely arranged.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
28. The ward should be well ventilated and always fresh and well aired.	1 2 3 4 5 6 7	1 2 3 4 5 6 7

29. On my arrival at the ward, the doctor should attend to me quickly.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
30. The doctors should be familiar with cultural aspects when treating me.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
31. Nurses should explain the rules and regulations of the ward to me.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
32. There should be a choice of food on the menu.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
33. I should be given the food that I have ordered.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
34. The nurses should spend time talking to me whenever they can.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
35. The hospital should have my best interest at heart.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
36. Nurses should be polite when speaking to me and my family.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
37. Nurses should be kind, gentle and sympathetic at all times.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
38. The nurses should attend to me quickly when I ask for help.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
39. I should be asked what size meal I would like.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
40. The meals should be hot when they are served.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
41. My doctors should discuss my post hospital care with me.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
42. Doctors should be very thorough in their dealings with patients.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
43. Doctors should do their best to keep me from worrying.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
44. The ward should be clean at all times.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
45. The ward should be kept well decorated	1 2 3 4 5 6 7	1 2 3 4 5 6 7
46. My doctors should treat me with respect.	1 2 3 4 5 6 7	1 2 3 4 5 6 7

47. I should be able to place complete trust in my doctor.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
48. Doctors should be courteous when speaking to me or my family.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
49. After each meal, the plates should be cleared immediately.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
50. Doctors should do their best to make me feel better emotionally.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
51. The beds, pillows and mattresses should be comfortable	1 2 3 4 5 6 7	1 2 3 4 5 6 7

Are there any other areas of your stay in hospital that you would like to comment about \_\_\_\_\_

\_\_\_\_\_

## 11.2 Appendix 2 Customer Service Questionnaire Part 2

### HOSPITAL

#### CUSTOMER SERVICE QUESTIONNAIRE:

#### PART 2

Strongly Disagree

Strongly Agree

1. My doctors did explain the reasons for the tests and procedures which were carried out on me.	1	2	3	4	5	6	7
2. Doctors did ensure that I understood my condition and its treatment.	1	2	3	4	5	6	7
3. Doctors spent time with me discussing my fears and concerns about my condition.	1	2	3	4	5	6	7
4. The nursing staff were familiar with any cultural concerns during my stay in hospital.	1	2	3	4	5	6	7
5. The hospital provided sufficient bathrooms and toilets in the wards.	1	2	3	4	5	6	7
6. Nurses explained any procedures and tests before they were done on me.	1	2	3	4	5	6	7
7. The nurses spent time with me discussing my worries regarding my stay in hospital.	1	2	3	4	5	6	7
8. Doctors were very careful to check everything when examining me.	1	2	3	4	5	6	7
9. Doctors gave me medical advice in language which I could understand.	1	2	3	4	5	6	7
10. I have a clear understanding of my current illness during this stay in hospital.	1	2	3	4	5	6	7
11. Doctors were competent when performing tests and procedures on me.	1	2	3	4	5	6	7
12. My doctor took a real interest in me as a person and not just in my illness.	1	2	3	4	5	6	7
13. Even though I was not cured right away, I was made to feel more comfortable.	1	2	3	4	5	6	7
14. Doctors did ask my permission before performing any tests on me.	1	2	3	4	5	6	7

15. Nurses asked for permission before performing any procedures on me.	1	2	3	4	5	6	7
16. The doctors did not appear to be in a hurry when they were speaking with me.	1	2	3	4	5	6	7
17. I have enough confidence in my doctor to discuss very personal matters.	1	2	3	4	5	6	7
18. The nurses treated me as a person and not just as a bed number.	1	2	3	4	5	6	7
19. I was treated with dignity and privacy during my stay in hospital.	1	2	3	4	5	6	7
20. I had access to religious support of my choice whilst in hospital.	1	2	3	4	5	6	7
21. My doctors presented me with options when deciding on my medical care.	1	2	3	4	5	6	7
22. Noises occurring outside the ward e.g. traffic, were kept to a minimum.	1	2	3	4	5	6	7
23. At night the noise inside the ward e.g. TV, Staff, Kitchen was kept to a minimum.	1	2	3	4	5	6	7
24. The bathrooms and toilets were always kept clean and pleasant to use.	1	2	3	4	5	6	7
25. The screens were always drawn around my bed whenever medical procedures and examinations were carried out.	1	2	3	4	5	6	7
26. Doctors and nurses involved me when making plans regarding my medical care.	1	2	3	4	5	6	7
27. The meals were well presented i.e. the food was nicely arranged.	1	2	3	4	5	6	7
28. The ward was well ventilated and always fresh and well aired.	1	2	3	4	5	6	7
29. On my arrival at the ward, the doctor attended to me quickly.	1	2	3	4	5	6	7
30. The doctors were familiar with cultural aspects when treating me.	1	2	3	4	5	6	7
31. Nurses explained the rules and regulations of the ward to me.	1	2	3	4	5	6	7
32. There was a choice of food on the menu.	1	2	3	4	5	6	7

33. I was given the food that I ordered.	1	2	3	4	5	6	7
34. The nurses spent time talking to me whenever they could.	1	2	3	4	5	6	7
35. The hospital had my best interest at heart.	1	2	3	4	5	6	7
36. Nurses were polite when speaking to me and my family.	1	2	3	4	5	6	7
37. Nurses were kind, gentle and sympathetic at all times.	1	2	3	4	5	6	7
38. The nurses attended to me quickly when I asked for help.	1	2	3	4	5	6	7
39. I was asked what size meal I would like.	1	2	3	4	5	6	7
40. The meals were hot when they were served.	1	2	3	4	5	6	7
41. My doctors did discuss my post hospital care with me.	1	2	3	4	5	6	7
42. Doctors were very thorough in their dealings with me.	1	2	3	4	5	6	7
43. Doctors did their best to keep me from worrying.	1	2	3	4	5	6	7
44. The ward was clean at all times.	1	2	3	4	5	6	7
45. The ward was well decorated.	1	2	3	4	5	6	7
46. My doctors treated me with respect.	1	2	3	4	5	6	7
47. I am able to place complete trust in my doctor.	1	2	3	4	5	6	7
48. Doctors were courteous when speaking to me or my family.	1	2	3	4	5	6	7
49. After each meal, the plates were cleared immediately.	1	2	3	4	5	6	7
50. Doctors did their best to make me feel better emotionally.	1	2	3	4	5	6	7
51. The beds, pillows and mattresses were comfortable	1	2	3	4	5	6	7



Are there any other areas of your stay in hospital that you would like to comment about?

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## 11.3 Appendix 3 Questionnaire Information Sheets

### 11.3.1 Handout Number One sent out with Questionnaire Part One

#### Service Quality Research Project at Hospital

Dear Hospital Patient,

My name is Malcolm Rees. I am student at Massey University. I am conducting a project, in collaboration with ,to measure service quality at Public Hospital. This project is being supervised by Professor Don Barnes from the Institute of Technology and Engineering, at Massey University.

The information gained from the project, when added to other information that the hospital already collects, will give the hospital a good idea of their customer's views of the service that they provide.

This project is a two part customer survey. If you would like to be involved please complete and return Part One of the questionnaire, which asks you about your expectation and the importance of various aspects of your visit to hospital. Part two of the questionnaire will be sent to you after you have been discharged from hospital.

To fill in the questionnaire, circle the number that most accurately describes your response to each statement. i.e A 1 shows that you strongly disagree with the statement, through to a 7 shows that you strongly agree with the statement. For the Importance section for each question, circle a 1 for not important through to a 7 for very Important.

The staff from the hospital will be handling all the information necessary to conduct the survey. The only information that the research team will see will be your survey responses. No information about your clinical condition will be requested. Your consent to take part will be assumed simply by completing the survey. If you do not wish to be involved then do not send part one back to the hospital. This will have no effect on any subsequent treatments at the hospital.

Both the staff at the hospital and the research team, consider that your views are very important. Your valued responses and comments will go towards an ongoing commitment to service quality at Hospital.

If you have any questions about the survey please contact at the hospital, on ph ext.

Yours Sincerely,

Professor Don Barnes  
Professor Manufacturing and Quality Systems  
Institute of Technology and Engineering  
Massey University

Chief Executive Officer

### 11.3.2 Handout Number Two which sent out with Questionnaire Part Two

Service Quality Research Project at

Hospital

Dear Hospital Patient,

Prior to your admission to hospital you were invited to participate in a service quality project, part of the hospital's ongoing commitment to providing a quality service. We now send you Part two of this survey which we invite you to complete and send back to the hospital in the self addressed envelope.

Part 2 of the survey may look the same as Part 1 however, there are slight changes in the wording so that we can find out about your experiences during your stay in hospital. From the differences in your response to both parts of the survey we will be able to develop an idea of your impression of service quality at the hospital.

This is your chance to have a say about your experience at hospital and we value your involvement. Please take the time to fill in the questionnaire by circling the number that most accurately describes your answer to each statement.

It is important that you understand that you have the right to decline to participate in the survey at any time and that your decision to decline will not effect any further treatment at the hospital. You also have the right to refuse to answer any question.

If you have any questions about the survey please contact at the hospital, on ph ext.

Thank you for your participation.

Yours Sincerely,

Professor Don Barnes  
Professor Manufacturing and Quality Systems  
Institute of Technology and Engineering  
Massey University

Chief Executive Officer

### 11.3.3 Handout Number Three. Reminder for Part Two

#### Service Quality Research Project at Hospital

Dear Hospital Patient,

After your recent discharge from Hospital, you were sent a questionnaire that was part of a quality survey at the hospital. We do not seem to have received your Part 2 questionnaire reply. Just in case you forgot, we have included a second copy of Part 2 for you to fill in and send back.

Please take the time to fill in the questionnaire so that we can include your valued comments in this important study, part of the hospital's ongoing commitment to providing a quality service to its customers.

If you have any questions about the survey please contact \_\_\_\_\_ at the hospital, on ph \_\_\_\_\_ ext.

Yours Sincerely,

Professor Don Barnes  
Professor Manufacturing and Quality Systems  
Institute of Technology and Engineering  
Massey University

Chief Executive Officer

**11.3.4 Demographic Section of the Questionnaire**

**CUSTOMER SERVICE QUESTIONNAIRE**

**PATIENT DEMOGRAPHICS**

**AGE:** ..... **GENDER:** Male / Female (Circle the correct one )

**ETHNIC IDENTITY:** (Circle the correct one )

**Maori**

**Caucasian**

**Pacific Islander**

**Other (specify).....**

**How long was your stay in Hospital? (Circle the correct answer)**

**Less than one day**

**One to two days**

**Greater than two days**

---

16 September 1998

Mr Malcolm Rees  
61 Miro Street  
**PALMERSTON NORTH**

Dear Malcolm

**Re: Human Ethics Application - HEC98/164**  
**“Measurement of Service Quality in a New Zealand Hospital”**

Thank you for your letter of 9 September 1998 and the amended Information Sheets and the letter from [REDACTED]

The amendments you have made and the explanations you have given now meet the requirements of the Human Ethics Committee and the ethics of your proposal are approved.

Yours sincerely



Professor Philip Dewe  
**Chairperson**  
**Human Ethics Committee**

cc Professor Don Barnes, Institute of Technology & Engineering - Turitea, Massey University

# MANAWATU-WHANGANUI ETHICS COMMITTEE

*Health Funding Authority*

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e-mail maher@clear.net.nz

Co-ordinator Ms Vicki Graham

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19 March 1999

Mr Malcolm Rees  
Medical Scientific Officer  
2nd Field Hospital  
Linton Military Camp

Dear Mr Rees

**Ethics Register 5/99: Measurement of service quality from the patient's perspective in a New Zealand public hospital; is SERVQUAL the answer?**

Thank you for your e-mail 17 March. I am pleased to advise that the Manawatu-Whanganui Ethics Committee gives full ethical approval for your study to commence in the [REDACTED] area.

Ethical approval is conditional upon the Ethics Committee receiving annual progress reports on the study, a final report at the completion of the study, and a copy of any publication. We note you expect to complete the study in August and to provide a report in November.

Please notify us if your study is abandoned or the protocol changed in any way.

We wish you every success with this study.

Yours sincerely



Ms Jenny Maher  
CHAIRPERSON

## 11.5 Appendix 5 Factor Analysis

### Principal Component Factor Analysis of the Correlation Matrix

#### Sorted Rotated Factor Loadings with Equamax Rotation using six factors

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
q41	0.812	0.043	-0.188	-0.214	-0.114	0.211
q51	0.806	0.190	-0.071	-0.318	-0.063	0.201
q42	0.695	-0.041	-0.350	-0.198	-0.224	0.043
q46	0.679	0.277	-0.349	-0.309	-0.084	0.198
q36	0.661	0.297	-0.028	-0.142	-0.376	0.330
q48	0.648	0.377	-0.050	-0.087	-0.366	0.302
q35	0.597	0.029	0.044	-0.476	-0.183	0.171
q43	0.528	0.175	-0.112	-0.058	-0.478	0.376
q24	0.488	0.205	-0.387	-0.238	-0.277	-0.416
q44	0.485	0.141	-0.304	-0.118	-0.352	-0.420
q8	0.419	0.246	-0.218	-0.229	0.205	0.299
q23	0.075	0.830	-0.184	-0.095	-0.219	0.159
q22	0.068	0.769	-0.067	-0.093	-0.266	0.034
q19	0.300	0.616	-0.291	-0.342	-0.213	0.311
q28	0.332	0.616	-0.479	-0.078	0.006	-0.111
q15	0.037	0.571	-0.265	-0.371	-0.358	0.224
q14	0.071	0.526	-0.321	-0.344	-0.412	0.183
q16	0.399	0.519	-0.115	-0.306	-0.233	0.397
q12	-0.033	0.479	0.013	-0.429	-0.178	0.394
q45	-0.011	0.472	-0.175	-0.124	-0.446	0.189
q2	0.076	0.109	-0.853	0.051	-0.041	0.170
q1	-0.047	0.306	-0.831	0.086	0.080	0.243
q11	0.142	0.360	-0.663	-0.110	0.150	-0.085
q5	-0.144	0.176	-0.652	-0.256	-0.269	0.132
q6	0.337	0.056	-0.576	-0.182	-0.037	0.261
q21	-0.055	0.343	-0.549	-0.483	-0.239	0.043
q9	0.276	-0.121	-0.523	-0.283	-0.150	0.055
q47	0.458	-0.006	-0.522	-0.174	-0.269	-0.227
q10	0.470	-0.077	-0.494	-0.129	-0.104	0.285
q25	0.216	0.339	-0.031	-0.731	-0.057	0.073
q17	0.188	-0.197	-0.095	-0.710	-0.303	0.237
q18	-0.043	0.232	-0.285	-0.701	-0.213	0.207
q3	0.451	0.092	-0.157	-0.622	-0.106	0.368
q13	0.472	0.182	-0.119	-0.603	0.028	0.376
q38	0.161	0.197	-0.295	-0.481	-0.205	0.103
q37	0.463	0.245	-0.211	-0.470	-0.150	0.350



Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
q39	0.107	0.047	-0.152	-0.187	-0.771	0.143
q32	-0.074	0.350	0.027	-0.185	-0.589	0.172
q40	0.284	0.275	-0.061	-0.179	-0.563	0.190
q49	0.314	0.457	-0.034	-0.097	-0.544	0.302
q33	-0.138	0.522	-0.347	-0.071	-0.531	0.130
q27	0.238	0.295	0.127	-0.397	-0.528	0.421
q29	0.259	0.315	-0.100	-0.099	-0.513	0.434
q50	0.427	0.311	0.010	-0.358	-0.482	0.320
q26	0.198	0.243	0.018	-0.401	-0.441	0.304
q4	0.014	0.087	-0.181	-0.264	-0.147	0.663
q30	0.138	0.169	-0.188	-0.166	-0.274	0.652
q7	0.209	0.254	-0.334	-0.349	-0.326	0.582
q20	0.082	0.035	0.034	-0.355	-0.326	0.547
q31	0.393	0.018	-0.352	-0.085	-0.222	0.502
q34	0.173	0.381	-0.125	-0.183	-0.419	0.483
Variance	7.0065	5.8913	5.6250	5.5218	5.4253	5.0794
% Var	0.137	0.116	0.110	0.108	0.106	0.100

## Principal Component Analysis

### Eigenanalysis of the Correlation Matrix

Eigenvalue	20.767	4.061	3.821	2.385	1.816	1.698
Proportion	0.407	0.080	0.075	0.047	0.036	0.033
Cumulative	0.407	0.487	0.562	0.609	0.644	0.677

Eigenvalue	1.568	1.374	1.239	1.027	0.980	0.934
Proportion	0.031	0.027	0.024	0.020	0.019	0.018
Cumulative	0.708	0.735	0.759	0.780	0.799	0.817

### Sorted Rotated Factor Loadings (Varimax)

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
q1	0.908	0.016	0.005	-0.029	0.090	-0.026
q2	0.862	0.015	-0.177	-0.169	0.112	0.018
q11	0.646	-0.138	0.139	-0.261	0.016	0.017
q5	0.553	0.065	-0.078	-0.052	-0.026	0.339
q10	0.484	-0.311	-0.398	-0.155	0.181	0.018
q21	0.483	-0.133	0.133	-0.191	0.449	0.250
q35	-0.033	-0.810	-0.154	-0.140	0.166	0.185
q41	0.141	-0.684	-0.309	-0.332	-0.070	0.075
q51	-0.002	-0.626	-0.256	-0.301	0.023	0.091
q3	0.058	-0.537	-0.207	-0.059	0.237	0.044
q13	0.037	-0.481	-0.192	0.007	0.241	-0.008
q43	0.035	-0.183	-0.745	-0.142	0.152	0.216
q48	-0.036	-0.177	-0.590	-0.319	0.217	0.246
q36	-0.089	-0.194	-0.572	-0.279	0.068	0.326
q6	0.378	-0.075	-0.542	-0.228	0.039	-0.243
q7	0.285	-0.179	-0.444	0.062	0.290	0.170
q44	-0.017	-0.034	-0.051	-0.861	0.056	0.056
q24	0.131	-0.167	-0.063	-0.821	0.268	0.030
q47	0.257	-0.099	-0.203	-0.708	0.002	0.091
q42	0.151	-0.347	-0.328	-0.510	-0.119	0.106

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
q14	0.255	0.020	-0.191	-0.227	0.683	0.246
q15	0.172	0.030	-0.169	-0.114	0.575	0.157
q26	-0.044	-0.290	-0.426	-0.070	0.522	0.206
q25	-0.047	-0.490	-0.029	-0.109	0.521	0.039
q32	0.002	-0.036	-0.078	-0.003	0.239	0.662
q39	0.083	-0.108	-0.196	-0.152	0.088	0.651
q40	0.038	-0.150	-0.179	-0.126	0.063	0.641
q27	-0.163	-0.282	-0.232	0.037	0.179	0.538
q33	0.361	0.130	-0.018	-0.092	0.358	0.504
q22	0.062	-0.050	-0.109	-0.045	0.254	0.221
q23	0.155	0.094	-0.197	-0.023	0.302	0.199
q28	0.385	-0.192	0.015	-0.356	-0.019	0.016
q16	0.111	-0.273	-0.226	-0.083	0.309	0.272
q30	0.141	-0.094	-0.174	-0.048	0.117	0.150
q4	0.146	-0.015	0.011	0.049	0.206	0.078
q20	-0.147	-0.108	-0.301	0.076	0.062	0.149
q8	0.112	-0.089	-0.057	-0.089	0.041	-0.101
q46	0.233	-0.409	-0.286	-0.331	0.087	0.128
q37	0.033	-0.295	-0.169	-0.148	-0.003	0.165
q19	0.206	-0.045	-0.324	-0.109	0.432	0.188
q29	0.037	-0.127	-0.269	-0.032	0.154	0.220
q45	0.037	0.072	-0.034	-0.154	0.181	0.144
q34	0.060	-0.145	-0.059	-0.064	0.168	0.224
q49	0.010	-0.179	-0.204	-0.091	0.142	0.451
q31	0.289	-0.408	-0.256	-0.075	-0.236	0.015
q50	-0.043	-0.380	-0.425	-0.110	0.433	0.312
q18	0.065	0.019	0.023	-0.060	0.281	0.266
q38	0.023	-0.111	-0.107	-0.257	0.117	-0.032
q9	0.248	0.035	-0.083	-0.397	-0.054	-0.069
q17	0.014	-0.394	0.051	-0.028	0.255	0.373
q12	-0.031	-0.076	-0.020	0.165	0.459	0.071
Variance	3.9107	3.8985	3.5807	3.5555	3.4481	3.4443
% Var	0.077	0.076	0.070	0.070	0.068	0.068

Variable	Factor7	Factor8	Factor9	Factor10	Factor11	Factor12
q1	0.231	-0.135	0.092	0.104	-0.013	0.109
q2	-0.015	-0.049	0.121	0.075	-0.099	0.052
q11	0.450	-0.038	0.092	-0.172	-0.036	0.231
q5	0.189	-0.069	-0.035	0.033	-0.545	0.172
q10	-0.297	0.026	0.378	0.200	-0.090	0.051
q21	0.146	-0.096	0.079	0.120	-0.357	0.153
q35	-0.004	-0.073	0.161	0.133	-0.100	0.151
q41	0.102	-0.168	0.280	0.094	0.053	0.235
q51	0.175	-0.157	0.466	0.083	-0.033	0.176
q3	0.028	-0.191	0.283	0.140	-0.336	0.386
q13	0.106	-0.133	0.437	0.088	-0.286	0.417
q43	0.070	-0.113	0.174	0.303	-0.095	0.143
q48	0.279	-0.325	0.351	0.071	0.084	0.137
q36	0.240	-0.316	0.416	0.057	-0.047	0.157
q6	0.036	-0.126	0.129	0.113	-0.489	0.092
q7	0.147	-0.344	0.127	0.234	-0.278	0.366
q44	0.114	0.019	0.100	0.166	-0.083	0.083
q24	0.119	0.055	0.098	0.072	-0.081	0.068
q47	0.013	-0.058	0.089	-0.047	-0.204	0.136
q42	0.009	-0.082	0.275	0.063	-0.117	0.277
q14	0.211	-0.240	0.145	0.211	-0.144	0.104
q15	0.336	-0.164	0.120	0.322	-0.220	0.254
q26	0.125	-0.313	-0.144	0.103	-0.157	0.161
q25	0.207	-0.142	0.114	-0.019	-0.462	0.045
q32	0.210	-0.257	-0.033	0.148	-0.163	-0.079
q39	-0.044	-0.043	-0.079	0.381	-0.150	0.253
q40	0.274	-0.127	0.133	0.136	0.082	0.440
q27	0.201	-0.352	0.170	0.239	-0.243	0.189
q33	0.260	-0.117	0.059	0.371	-0.129	-0.057
q22	0.707	0.005	0.024	0.297	-0.131	0.003
q23	0.698	0.067	0.212	0.266	-0.181	0.024
q28	0.663	0.019	0.189	0.151	-0.169	0.044
q16	0.426	-0.360	0.330	0.101	0.035	0.334

Variable	Factor7	Factor8	Factor9	Factor10	Factor11	Factor12
q30	0.039	-0.821	0.169	0.209	-0.166	0.001
q4	-0.073	-0.774	0.241	0.159	-0.073	0.224
q20	0.090	-0.582	-0.075	0.092	-0.310	0.338
q8	0.086	-0.150	0.746	0.109	-0.152	0.138
q46	0.147	-0.119	0.580	0.113	-0.242	0.045
q37	0.207	-0.247	0.478	0.187	-0.404	0.322
q19	0.408	-0.171	0.433	0.158	-0.222	0.225
q29	0.153	-0.165	0.159	0.702	-0.048	0.288
q45	0.325	-0.203	0.007	0.622	-0.274	0.049
q34	0.171	-0.445	0.237	0.618	-0.173	0.054
q49	0.286	-0.138	0.259	0.551	-0.034	0.110
q31	0.084	-0.351	0.057	0.449	-0.200	0.212
q50	0.065	-0.145	0.226	0.362	-0.179	0.038
q18	0.064	-0.202	0.327	0.050	-0.741	0.206
q38	0.128	-0.141	0.125	0.293	-0.670	0.098
q9	-0.022	-0.065	0.105	0.082	-0.125	0.755
q17	-0.267	-0.121	0.168	0.002	-0.223	0.608
q12	0.377	-0.272	0.072	0.245	-0.075	0.498
variance	3.4392	3.3940	3.3243	3.3142	3.2466	3.1139
% Var	0.067	0.067	0.065	0.065	0.064	0.061