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Barium enemas : the patients' perspective - are we satisfying their psychological needs?

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SUMMARY

Quality of patient care has received much publicity with patients becoming more informed about their rights in the hospital. Consequently they are making greater healthcare demands. Increasing consideration needs to be taken of the quality of care given to the patients, and of their feelings about the services provided.

The research investigates patients experiences of barium enemas, with the aim of gaining a holistic view of the examination, and addresses the area of patient information in this context. The underlying purpose of the research is to employ professional knowledge to address the psychological needs of patients.

The research has tracked the patient's experience and perception of the barium enema examination throughout its whole process. This involved three main phases using both qualitative and quantitative methods, each focusing on patient care and satisfaction.

Using interviews it was established that patients attending for barium enema were anxious. Following this the relationship between information and anxiety was addressed using a computer assisted learning package and a specially designed information leaflet. It was found that patients who had received the information leaflet had statistically significant reduced levels of anxiety. Furthermore, patients receiving the leaflet had a stronger feeling of having sufficient information than those who received only the standard hospital information. Giving the patient information relating to the procedures and likely sensations has been shown to reduce their anxiety level. The computer package showed potential for knowledge gain and usability.

Implications of the results are in the area of professionalism, role development and standards for care of the patient in the diagnostic imaging department. Clinical implications are at a patient management level, with attention to continuity of care. It is suggested that high quality patient care and increased patient satisfaction can result when a more holistic and patient centred approach is adopted by radiographers.

CONTENTS

PAGE

PAGE

PAGE

PAGE

PAGE

LIST OF TABLES

PAGE

LIST OF FIGURES

PAGE

APPENDICES

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1. Introduction

Malignant neoplasm of the colon represents a tremendous health problem in the United Kingdom. In 1994 the deaths from malignant neoplasms totalled 141,747 with malignant neoplasm of the colon, rectum, rectosigmoid junction and anus accounting for 15,921 deaths (Whitakers Almanack, 1997; Office for National Statistics, 1997). Cancer remains the most feared disease in our society (Cancer Relief Macmillan Report, 1988). It is the second commonest cause of death, with a quarter of all deaths in Britain being attributed to cancer (OPCS, 1988). Colorectal cancer is today in the Western world second only to lung cancer. With numbers escalating in this manner the methods of detecting malignant neoplasms need to be addressed in the context of the service that is being provided. In the United States a screening programme exists due to their large problem with colorectal disease, as yet no developments of this type have been implemented in the United Kingdom.

Primary methods for evaluating patients with suspected colonic tumours are endoscopy and barium enema examinations. Although these procedures are regarded as complementary methods and have high accuracy rates they are not capable of assessing the depth of the tumour, infiltration or metastatic spread. However, the Barium enema is considered the 'gold standard' in this country for investigating the large intestine (Domjan et al, 1997).

1.1 Introduction and Aims of the Research

This research is focused on the barium enema examination from the patients' perspective. It aims to ascertain a holistic picture of the extent of patient feeling and evaluate the effect of information on patient anxiety levels.

The project has five components: (A) Semi-structured interviews with patients attending for barium enema (prior to, and after the examination). (B) Focused interviews with patients who have experienced a barium enema, and responded to a magazine article or poster campaign. (C) Development of an information leaflet, and investigation of its effect on barium enema patients' anxiety. (D) Structured interviews with patients' who had participated in phase C. (E) Development of a computer based educational programme for barium enema patients.

The barium enema is a radiological investigation of the large intestine. The invasive nature of the examination and the necessary patient preparation inevitably results in altered emotional states in some patients. The examination itself has developed since the 1930's and, despite the advances in technology over the last 20 years, is considered the 'gold standard' in colonic screening. The examination is generally straightforward and provides significant investigative information about non-specific colonic conditions. It is a relatively inexpensive procedure, and is considered to give a relatively low radiation dose to the patient. However, Howard (1992), found her barium enema experience harrowing, undignified and without sufficient information, whilst Ferguson (1988), cautions that it is not an investigation for the physically or mentally frail.

This research acknowledges the importance of this examination and the likelihood of its' continued existence and practice, particularly in the light of rising colorectal cancer deaths (Whitakers Almanack, 1997 & Office for National Statistics, 1997). This research investigates patients' involved with barium enemas to gain a holistic view of the examination and addresses the area of patient information in this context. A holistic approach to radiography is one that is largely unreported in the literature. Radiography tends towards a reductionist view, focusing on distinct body parts. This will be reviewed in Chapter 2.

The importance of information for patients has been investigated across healthcare in various forms. Several reports in radiography have suggested that informing patients

about the impending examination decreases anxiety (Wilson-Barnet 1978, Hartfield and Cason 1981). Different areas within healthcare and different forms of information giving are reviewed in Chapter 3. The work reported concentrates on the patients' conceptualisation of the barium enema and addresses each component of the examination. This research does not specifically investigate the performing of the examination, although the history behind the barium enema and the technical aspects of the procedure are reviewed. The primary aim of the work is to establish a holistic picture of the barium enema. Correlation between information and anxiety is reported in an attempt to address factors associated with satisfying the psychological needs of patients' attending for barium enema.

1.2 Previous Work

Research into the effects of the barium enema had taken place prior to the commencement of this investigation. Firstly, the author, as part of her BSc project (Le Masurier, 1994) had made a preliminary investigation of the effect of knowledge of the barium enema examination upon the level of anxiety of the patient. Secondly, Wilson-Barnett (1978) and Hartfield and Cason (1981) had performed investigations into the effects of informing barium enema patients. However, using a holistic approach and focusing the research from the patients' perspective has not been explored previously.

1.3 Reason for conducting the research

The evaluation of holistic patient conceptualisation, and development of a study tool to meet patient needs using sound research methods, enables practitioners and departments to make reasoned choices regarding practice that are likely to achieve optimum quality of patient care.

The primary interest of the author is in the area of holistic patient care in radiographic examinations. Radiography claims to be a 'caring profession' yet there is little evidence to support radiography extending from the confines of the body part and x-ray room.

One of the problems in radiographic research is the apparent lack of a research paradigm. Part of the purpose of this research is therefore, to provide a foundation that can be used to fill some of the gaps and consequently enhance the professional status of radiography.

1.4 The need for research in radiography

Radiography is classed as a professional body. The crucial characteristic of a profession is its perceived knowledge base, which gives prestige, and power to those associated with it. The essential elements in the development of any profession requires critical analyses of existing practices and policies, and to enable radiography to follow this through radiographers need to be able to research.

> 'One of the distinguishing characteristics of a profession is the development of a body of knowledge unique to the purposes of that profession. A fully developed profession adds to its body of knowledge through research'
>
> (Anon, 1951)

Radiography at the present time does not have a sound research base, but development is being made in the right direction, and at a considerable pace. Radiographers are well aware that what is good professional practice one day is totally inadequate and out of date the next. As a profession, there is a need to acquire the ability to evaluate and re-evaluate ones own work and that of others in the light of current developments, and also to be able to grow in our area of study. In radiography this has been carried out on a technical and clinical level however, this is now also being carried out on an academic level and thus a research grounding for the profession is being formed. Unfortunately,

due to the lack of research base in radiography, methodological theory specifically for radiographic practice is not yet developed, and due to the complexity of radiographic practice is a difficult procedure.

The radiography profession is however, making great strides into the world of research and is developing the theoretical underpinning the profession deserves. It is important in this context that a few steps back are taken to enable the profession to be looked at as a whole. It should not simply be regarded in a technical or clinical sense - neither of which should be undermined, however to look forward is to give radiography the respect it deserves by recognising that it is far more than placing a body part in the correct position and pressing a button.

The Society of Radiographers was formed on the 6th August 1920; its remit was:

> 'To promote the science and regulate the practice of radiography'
>
> (Moodie, 1970 p7)

The aims of the Society set out in a publication in 1923 state:

> 'With the increasing complexity of installations necessitated by recent developments of X-ray apparatus, it is obviously essential that the assistants employed in their manipulation shall have undergone an adequate technical training and shall receive some official recognition of the responsible position which they hold. In view of the terrible potentialities for evil which are universally acknowledged as belonging to the X-rays when handled in an unskilful manner, it was realised that a heavy burden of responsibility was put upon these workers. The Society of Radiographers was formed to comprise those approved persons who are at present working at the subject, and to qualify new workers after due training and an exhaustive examination'.
>
> (Moodie, 1970 p10)

These still hold true to the essence of the Society today.

Much change has been evident within the radiography profession since 1990, due mainly to the NHS and community care act but also from the College and Society of Radiographers with the revision of the policy for education. The College set a ten year target in 1985 that:

'...All entrants to the profession should be educated and trained to degree level'

(Jordan, 1995)

There has already been the move of training out of hospital schools and into University departments with the qualification into the profession moving from diploma into degree.

'It was clear from the beginning of discussions about degrees that they would have to be introduced in the context of expansion of the boundaries of the profession'

(Jordan,1995)

Radiographic education is therefore, moving from transmission of knowledge to innovation in knowledge which is bringing with it specialisation in research.

It is inevitable that researchers or theoreticians will emerge and that consequently a division of labour will develop with theory orientated people and practice orientated people. If this division is properly integrated it will serve to produce an accelerated expansion of the body of knowledge and a development of theoretical branches around which specialities nucleate. Work that is professionalised or specialised around esoteric knowledge and technique, such as radiography, must create room for expert judgement, and autonomy of decision making and practice becomes a hallmark of the advanced profession. More change is necessary and inevitable as radiography naturally develops

into a research profession with radiographers who are highly specialised in their own specific area.

> 'It is the duty of radiographers to develop the practice of radiography and as such engage in research and support the research of others'
>
> (College of Radiographers, 1994)

1.5 General Hypotheses

A general hypothesis for the project can be formulated thus:

> Anxiety levels in patients attending for barium enema will vary from 'normal', and by informing patients prior to their visit to hospital, it will be possible to reduce the change in anxiety.

The hypotheses for the research reflect the holistic nature of the investigation:

(a) That patients consider that they have sufficient information prior to the barium enema examination.

(b) That patients attending for barium enema examinations are anxious.

(c) That knowledge of the barium enema examination promotes less anxiety.

(d) That patients have physical effects directly attributable to the barium enema examination after they leave the hospital.

(e) That patients have psychological effects directly attributable to the barium enema examination after they leave the hospital.

(f) That informed patients experience different physical and psychological effects after the barium enema than uninformed patients.

(g) Patients remember aftercare information.

1.6 Context of the Research

Within radiography, there is a need to focus on the patient. The Department of Health 1989 White paper, 'Working for patients', in 'The government's strategy' of 'Putting patients first' and the 1990 National Health Service and Community Care Act, acknowledged the need for 'clear and sensitive explanations of what is happening on practical and clinical patient matters'. It is determined that hospitals should 'provide a service which considers patients as people'. All of the proposals put the needs of the patient first - Margaret Thatcher's final comment in the foreword states, 'the patients' needs will always be paramount'. The Patients' Charter (Department of Health, 1991) states the right of the patient 'to be given a clear explanation of any treatment proposed, including any risks and alternatives, before the patient decides whether they will agree to the treatment'. There has recently been the launch of the third edition of the Patient's Charter for Wales (Welsh Office, 1996), which has set even higher standards after taking into account patient views. These documents all appear to have a common goal - to ensure high standards of the best care, always 'putting the patient first'.

Following these sorts of guidelines not only gives a higher quality of care to the patients but also results in increased patient satisfaction and reduced levels of anxiety. This is what we are ultimately looking to provide.

Initial patient contact in diagnostic radiography has been shown to be important. Dwane (1993), explained the importance of communication, caring and empathetic attitudes towards the patients', as they are concerned about their visit to the x-ray department, thus need reassurance. However, the author believes that this concern about patients' welfare should begin earlier.

More and more examinations in radiography are invasive, and radiography (and radiographers) at this level needs to consider the 'whole person' or a more holistic approach to radiography. The 1996 edition of the Oxford English Reference dictionary defines holistic (for medicine) as:

'The treating of the whole person including mental and social factors rather than just the symptoms of a disease'.

For radiography we could simply change the last four words of that definition to 'body part that needs an x-ray'.

In the early 1980's the Radiology and Cardiology Nursing Forum set up a special interest group. This was in part because the radiology nurses realised that the setting of national standards would enhance patient care at a local level. The Royal College of Nursing first produced publications from this forum in 1993 giving guidelines for good practice or national standards for particular areas of nursing. The philosophy in the radiology nursing standards of care states that:

'Individualised care should be provided by knowledgeable radiology nurses and should meet the physical, psychological, safety and information needs of the patient...'

(RCN, 1993 p2)

It is later stated that the standards laid out

'Have been established to identify an achievable quality of care for patients undergoing radiological procedures...'

(RCN, 1993 p4)

A model of nursing care of patients in a diagnostic imaging department has been developed by the Royal College of Nursing Dynamic Standard Setting System (DySSSy) which covers the nursing needs of patients undergoing any procedure in a diagnostic imaging department. The holistic nature of the model of nursing care is noteworthy. It has the patient needs in the centre, surrounded with the different types and ways in which care can be given to fulfil the patients' requirements (See Appendix 1). The four main topics of physical comfort, communication and information, psychological and safety are outlined and each of these is further covered giving twelve

sub topics. This type of information is excellent to see but needs careful consideration from the radiography profession, as, from a radiographer's viewpoint it appears to cover many aspects of a traditional radiographer's role. Whilst there is great emphasis on role extension in radiography, it is a matter of concern when it appears that the radiographer's role is simply that of a technical one whilst the nurse carries out the entire caring role. In this rapidly developing profession, perhaps it is time that more attention was paid to the radiographic process and the development of some radiographic standards for care of the patient in the diagnostic imaging department.

A holistic approach to the Barium enema is something that warrants careful consideration. The Barium enema is an unusual examination in radiography as it is one of the very few procedures that a patient can have in the x-ray department and then be sent home immediately after it is finished. Most x-ray examinations will have been requested by a doctor who will see the films straight afterwards in clinic, or a casualty doctor who will see the patient after they have been x-rayed, or the patient will be taken straight back up to the ward after the x-ray. The Barium enema patient is, on the whole, an out-patient who will get on a bus, in a taxi, or in their car and go home once the examination is over, often to be on their own with their thoughts and fears.

It is being recognised that examinations and patients in the radiology department should be approached in a more holistic way. Examinations such as Barium enemas need to be addressed from the beginning of the appointment system to how the patients are coping afterwards in their own environment. This is a very new and different approach to the x-ray examination, however radiographers need to take responsibility for the people under their care, and look into the problems and effects experienced by people resulting from the procedures that they have carried out on them. People should no longer be treated as a wrist, a foot, a skull, a chest or even a barium enema. They are human beings with thoughts, feelings and fears. Radiographers have the potential to make a bridge across the river of professional power and reach out to these people and treat them with the

respect that they deserve - like thinking, feeling people rather than body parts that need radiological intervention.

This research is set within this developing ethos of listening to the patient, addressing the area which they highlight and delivering the care that they require to feel comfortable. This should consequently make the experience of visiting the x-ray department as acceptable as possible. The underlying essence of the research is the use of professional knowledge to psychologically prepare patients, rather than use the knowledge just in a simply technical manner. The changing approach to patient care, and the effects on the patient of the healthcare system are considered in Chapter 3.

Following the background to the barium enema (Chapter 2), the review of the literature (Chapter 3) and the methodological considerations. The research follows three main phases:

1. Ascertaining patients' conceptualisation of the barium enema examination - components A and B. (Chapters 5 and 6)

2. Expansion of the information theme of the research by developing a study instrument and computer based information - component E. (Chapter 7)

3. Implementation of the instrument and follow up - components C and D. (Chapters 8-9)

With the exception of component E, the research has included people who were about to have or who recently have experienced, a barium enema examination. Forty subjects were included in the first phase: Component A - n=15, Component B - n=25. The second phase included five hundred and fourteen subjects: Component C - n=514, Component D - n=23. The subjects in component D being part of the component C

sample. The numbers of subjects participating in component D were much smaller than expected, however further contact of subjects from component C was not possible, therefore this could not be ameliorated.

The subjects included in the computer based educational programme investigation (Component E - n=32) were from two sources. Firstly, health faculty lecturers at the University of Wales, Bangor Wrexham campus. Secondly, in-patients on two elderly wards at a local District General Hospital, which did not participate in any other components of the research.

1.7 Rationale for the choice of the Barium Enema examination

The barium enema examination is one which affects a person physically for approximately two days prior to the actual examination and potentially for a week after the examination is deemed 'completed' by the x-ray department. The preparation for the examination affects life to such an extent that the majority of people find it impossible to carry out normal activities such as going to work. The examination itself has been found to have detrimental psychological effects in some cases, leaves people feeling exhausted and generally arrests normal daily activity for the entire day of the examination. For days after the examination, although a persons' normal routine can be re-established, in every case there is the embarrassment and constant reminder of the examination in white, flush resistant form. On top of this, some people suffer physical pain in the form of headaches (most probably due to de-hydration) and stomach pain (responsibility here could lie with (a) the air used during the procedure (b) constipation from impaction of the barium suspension). Taking this into consideration and bearing in mind that there is generally a sound medical reason for the person being referred for this examination in the first place, it must be recognised that they could be feeling unwell before they meet with this radiological investigation. Thus, there is a sound case already for addressing this examination from the patients' perspective. Furthermore, this is a

radiological procedure that provides one of the rare opportunities for radiographers to create a rapport with their patient, and really make use of more than their technical skills, due to the length and nature of the procedure. Although this research is focused to the patient the author is interested to see if radiographers make a significant impression on the patients.

The choice of this examination therefore, has its foundation in the invasive nature of the examination, however there was also stimulation from the author's experiences whilst working in this area, and also from correspondence to nursing and radiography journals from people who had experienced this examination.

1.8 Organisation of the thesis

Following the background and literature review (Chapter 2-3). The thesis explains each facet of the research individually in the following chapters. Chapter 10 discusses the results obtained, relates them to the original hypotheses and considers the implications for clinical practice. Chapter 11 concludes the work carried out and presents recommendations for possible future work.

2. Background to X-rays and the Large Intestine

2.1 X-ray history

The discovery of x-rays by Röntgen in 1895, with the first pictures of the bones of the hand, started a roller coaster effect with respect to 'seeing inside' the body. Within a few months the gastrointestinal tract was being studied. Techniques used for more than 30 years prior to the discovery of x-rays were found to be useful. These included procedures such as; tubes being inserted into the rectum and passed for various distances, gas insufflation and sounding, and bismuth which had been used for its therapeutic effect (Eisenberg, 1992, pp256 & 277). It can be seen that, from very early on, two contrast materials had been defined for use in the large intestine before the x-ray equipment to enable demonstration of the materials and the large intestine had been invented.

The first gastrointestinal study was of the upper gastrointestinal tract and is thought to have been performed on March 26, 1896 by Wolf Becher, who injected liquor plumbi subacetici into white mice and guinea pigs. He wrote of his experiments:

> 'The property of such solutions (salts of various metals) in being impermeable to x-rays offers a means of obtaining photographs of the internal hollow organs of animals through the use of roentgen procedures. One needs only to introduce into a hollow organ a solution of the metal salt in such an amount that the walls of the organ are somewhat distended'
>
> (Becher, 1896 in Eisenberg 1992 p256)

The first use of x-rays to visualise the lower gastrointestinal track is reported to be carried out by Turck who simply observed the position of metallic rectal tubes. The early radiographic large intestine examinations used bismuth in the form of a meal whose distribution was followed radiographically at specific times. In these early stages

an effort was made to achieve double contrast with the injection of oxygen or air into the large intestine (Eisenberg, 1992).

In 1910 Georg Fedor Haenisch described a useful technique for demonstrating the large intestine. He stressed the importance of cleansing the large intestine prior to the examination, then described using a retrograde instillation of Bismuth Carbonate, bolus alba and water into the large intestine under fluoroscopic control. This combination of ingredients would be mixed by the radiographer and was therefore subject to inconsistency in the density shown in the x-rays. Barium Sulphate mixture used in the Barium enemas today comes in pre-packed bags ready mixed. This, as well as being sterile and more hygienic results in consistent and uniform density in the radiographs. The technique described is termed as a single contrast procedure, as the barium sulphate solution is the only substance that is introduced into the large intestine. The radiodensity of this mixture is greater than that of bone, muscle and fat and therefore any structures of that kind that are covered by it will not be visible on radiographs. As the bowel was filled with, on average, 1500ml of the substance (Watson, 1974) only the simple outline shape of the large intestine would be visible.

Haenisch also recommended that the bismuth mixture should be siphoned out after the examination to avoid discomfort to the patient due to thickening and hardening of the mixture. This was also said to be an aid to the examination so that the movement of the mixture through the large intestine could be observed for a second time. He invented a trocoscope, which was a horizontal table equipped with fluoroscopic facilities to enable him to carry out the examination (Eisenberg, 1992). He stressed the importance of the fluoroscopic control in this investigation as he felt that a tumour might be the cause of any interruption in the flow.
He states:

'In my experience the only suitable method for this purpose is the contrast enema, and even this is only satisfactory when the advance of the fluid is observed and studied on the fluoroscopic screen from the moment of its entrance into the rectum until it has reached the caecum. Even with such a contrast enema, roentgenography alone is completely inadequate and should only be used as an aid for the confirmation and permanent recording of important individual stages or unclear places in the fluoroscopic examination'.

(Haesnisch, 1910 in Eisenberg, 1992 p278)

It was not until 13 years later that A.W. Fischer reported the double contrast technique. This involved the introducing of a lesser amount of the barium sulphate mixture and the addition of air as a negative contrast due to its radiolucent properties. A double contrast study had been performed earlier by Laurell and Odquist (1921), however their technique involved introducing air after a bismuth mixture meal had reached the large intestine. Fischer described his technique in 1923, he stated:

'If one partially fills the intestine with the usual contrast material...and subsequently insufflates the intestine with the usual amount of air, then, after peristaltic churning, a thin deposit of the contrast adheres to the mucosa which produces in the roentgen picture a sharp outline of the contours of the intestinal walls...Depending on the circumstances of the individual case, after as much of the contrast fluid as possible has reached the caecum, one permits all, part or none of it to be evacuated...Next, one proceeds with the administration of air per anum by means of the usual double bellows, which is equipped with a rectal tube and a stopcock which only opens during the emptying of the two bellows and should thus protect the bellows from soiling with a backflow of the contrast material. The administration of the air is controlled by observation of the fluoroscopic screen with the patient lying on his right side or standing...The contours and lumen of the intestine are very clearly reconizable, so that any stenosis or tumor is certain not to pass unnoticed'.

(Fischer, 1923 in Eisenberg, 1992)

This first technique was improved upon in the 1930's by Kirklin and Weber at the Mayo clinic and refined in 1953 by Welin in Malmo. In a paper in 1967 he states:

'A special modification of the double-contrast method of colon examination has been used routinely in Malmo for the past 13 years....'

and goes on to say that:

> 'Most modern roentgenologists agree that the conventional barium enema is no longer satisfactory for the investigation of diseases of the colon, particularly not for the early detection of neoplasm. We must use a technique which permits more refinement in diagnosis...'
>
> (Welin, 1967)

Most radiologists have their own variations on the technique.

The Barium enema is an examination that is today still widely used in the diagnostic imaging departments for investigating the large intestine. At the present time the Barium enema is a double contrast examination, using both Barium Sulphate solution and gas, most commonly in the form of air. More recently Carbon Dioxide has been adopted due to better absorption by the body. As it does not contain nitrogen, there is reduction in the incidence of severe abdominal pain after the barium enema (Taylor, 1991).

Coombs (1983), recollects his experiences of being a radiographer from 1912 and says:

> 'The experience of being a patient in those days really was frightening...All fluoroscopy was conducted in total darkness and, of course, exposures were long - so the patient had to endure this fright and keep still as well'
>
> (Coombs, 1983)

2.2 The Barium Enema

2.2.1 Preparation

It is essential for the large intestine to be free from faecal matter for the Barium enema examination. There are three main factors in achieving a 'clean colon': colonic lavage, laxatives and dietary restrictions. Colonic lavage is used to promote defecation,

approximately 500ml of fluid is run slowly into the large intestine via the rectum whilst the patient is lying on their left side slightly tilted forward (left anterior oblique). When the fluid has been run in, the patient is asked to lie prone (on their stomach) and then turn onto their right side in an effort to clean the transverse and ascending colon. Ideally the patient should then rest on the table for 10 minutes before going to the toilet. In some cases this procedure needs to be repeated a few times before the bowel is clear. This procedure is not now carried out routinely, but in some hospitals a simple single colonic lavage is given before the barium enema, however this is quite rare, generally only being performed in specialist hospitals.

Laxatives are now a major part of the preparation of a patient for barium enema and dietary restrictions are imposed in the form of a low residue diet. This restricts the patients' intake of milk, red meat, fruit, vegetables and brown bread, in an effort to prevent new bulk faeces forming. A typical regimen for a patient undergoing this type of preparation is as follows: a low residue diet for two days prior to the examination combined with an increased intake of fluids of up to approximately 6 pints of extra fluid per day. From two days prior to the examination no solid food or milk allowed. The day before the examination the laxatives must start to be taken. Frequent bowel movements should be expected within three hours of taking the first dose. A high fluid intake is recommended throughout the preparation to avoid dehydration.

2.2.2 The Examination

The Barium enema requires the use of radiopaque and radiolucent contrast media within the large intestine to enable visualisation of the mucosal pattern. On arrival in the x-ray department the patient is instructed to undress completely and put on the open backed hospital gown. The patient is then taken into the x-ray room and the procedure is explained to them. The patient is then positioned on the x-ray table on their side with their knees flexed.

To carry out the investigation a flexible tube which is attached to a bag of Barium Sulphate solution is passed into the rectum, after which the patient is generally asked to lie prone. The patient may be given a hypotonic agent (Buscopan or Glucagon). This relaxes the smooth muscle action and reduces peristalsis, thus allowing a more comfortable examination for the patient and optimum demonstration of the intestinal mucosa (Bryan, 1987 p309). Retrograde infusion of the barium follows under fluoroscopic control until it reaches the splenic flexure, at this point the barium is clamped off. Air is then gently introduced to force the column of barium towards the caecum therefore producing a double contrast effect (Chapman & Nakielny, 1988 p42). To ensure the bowel mucosa is coated; the patient is instructed to turn from the prone position onto their left side and then over to a right anterior oblique position. Spot films of the rectum, sigmoid colon, hepatic and splenic flexures and the caecum are taken by the radiologist in prone, lateral, oblique and erect positions.

Once the bowel mucosa has been adequately coated the barium is drained out and air is pumped in until the caecum is distended to enable visualisation of the entire large intestine by double contrast. Overcouch films to demonstrate the whole of the large intestine are taken by the radiographer. Supine, prone, left and right decubitus, Hampton's and lateral rectum films are some of those used, however there are great variations in the views used in different departments.

2.2.3 Aftercare

When the films have been checked the tube should be removed from the patient and they should be taken straight to the lavatory. If buscopan or glucagon has been administered, the patients' vision must be checked before they are allowed to leave as they may still have slightly blurred vision. Patients should be given instructions that they may eat and drink normally, but should try to drink more than normal. They should be told that a mild laxative might be necessary to avoid impaction of the Barium. It

should also be explained that bowel motions will be white for a few days due to the barium and that it is not a matter for concern.

2.3 Summary of the Barium Enema

As it can be seen, the examination is an invasive one. It involves rigorous preparation, physical endurance and affects at least two days of persons' life. The basic technique from the early 1900's has been improved upon, but no significant alteration has been made. Radiographic examinations of such an invasive nature, (for example air encephalography which was developed in 1919, where a needle is inserted into the spinal cord in the lumbar region and air is injected to enable visualisation of the brain) have been phased out in preference of new and better imaging modalities and techniques. As explained in the opening chapter, this examination is still held in high regard, however, advances have been made in imaging technology and the effect that these have on large intestine imaging are discussed below.

2.4 The Future of Large Intestine Investigations

2.4.1 Technology

The development of computerised tomography (CT) in the 1970's changed the face of neuroradiology and again in the 1980's the advent of magnetic resonance imaging (MRI) resulted in many CT investigations being replaced by MRI. The large intestine examination of choice is still the barium enema. Radiography has however, developed branches of computerised tomography, ultrasound and magnetic resonance imaging, all of which with special contrast agents could enable visualisation of the large intestine.

Computed Tomography (CT) is capable of identifying most carcinomas of the large intestine (Balthazar et al, 1988 and Thoeni, 1989). Neff and Van Sonnenberg (1989) showed that CT can demonstrate diverticular disease, one of the most common findings from barium enemas. Moreover, CT has been shown to demonstrate other mucosal abnormalities such as inflammatory bowel disease and is also capable of providing information about internal structures other than the bowel (Balthazar, 1991; Edwards et al, 1983). CT provides direct imaging of intraluminal, mural and serosal abnormalities. It can also give information concerning extravisceral structures and their relationship to the solid organs, gut, retroperitoneum, mesentery, lymph nodes and blood vessels (Kressel et al, 1978; Megibow, 1986; and Zerhouni et al, 1988).

> 'CT has proved to be a powerful tool for detecting and staging carcinomas of the colon and rectum. The sensitivity, specificity and accuracy for staging primary colonic and rectal carcinomas range between 48-100%'.
>
> (Thoeni, 1989)

Elderly patients have been reported to experience the greatest adverse effects from the barium enema (Robinson and Demuth, 1985). Computed Tomography and Barium enema were compared for this group of patients in a study carried out by Day et al. (1993). It was found that patients preferred CT and as a result CT is to be used initially for elderly patients in the hospital concerned.

Kawamoto et al (1994), compared endoscopic ultrasound and target air enema CT with Barium enema and colonoscopy for imaging of colonic submucosal tumours. It was concluded that the endoscopic ultrasound and target air enema CT are useful supplementary studies to the more conventional. Younathan et al (1991), Siegal (1991) and Panaccione et al (1991), have all investigated the use of magnetic resonance imaging of the colon. Matsushita et al (1994) evaluated the use of MRI in advanced gastric cancer and concluded that MR was useful for preoperative evaluation of serosal invasion. It has been suggested that:

'...it (MRI) offers potential for detection and staging of tumours that may exceed current methods, particularly CT.'

(Goldberg and Thoeni, 1989)

Both Lind et al, (1991), and Goldenburg et al, (1993), have used radionuclide labelling to look at carcinoma of the colon. Transrectal ultrasound can provide images of the rectal wall along its circumference. It can enable a length of up to 14cm from the anus to be screened, and is sensitive enough to detect tumours less than 1cm in diameter. Also the examination is quick, only taking approximately 2 minutes (Cytron et al, 1992). Hulsmans et al (1992), in a study screening for invasive malignancy state:

'Transrectal ultrasonography is a well-known imaging modality because of its ability to depict the individual layers of the intestinal wall. Therefore, it is increasingly used in the evaluation of rectal pathologic conditions, mainly in the preoperative assessment of infiltration depth of rectal cancer'

(Hulsmans et al, 1992)

Ultrasound has also been used transvaginally for diagnosing appendicitis (Siegal, 1992, Arbatli et al, 1993, Pelsang et al, 1994) and also sigmoid diverticulitis (Broekman et al, 1993), and also in cases of adult intussception (Kojima et al, 1992). Apthorp et al (1997), Harvey et al (1997) and Lees (1997), all present data on recent studies into spiral CT for assessing colonic tumours. They report encouraging results with CT being more accurate in staging advanced tumours. The main weakness encountered has been lymph node evaluation. However, Burniston (1993), designed a retrospective study to evaluate the diagnostic role of the barium enema examination in the detection and management of carcinoma of the large intestine in patients over 70 years. It was concluded that:

'The barium enema examination is the most appropriate and effective examination in the investigation of sudden or prolonged changes in bowel habit'.

(Burniston, 1993)

Thus it has been demonstrated that the large intestine (and the various abnormalities associated with it), can be visualised through many different imaging modalities. However, all of these technological advances must still be considered as supplementary to the barium enema.

2.4.2 Practice

Although the technique of the barium enema has changed relatively little since its early development, the practice of the examination has seen a significant change. A radiographer has replaced the tradition of the radiologist performing the examination, (in an ever-increasing number of radiology departments). This change is very significant in terms of continuity of care, and demonstrates the changing quality of the examination. It also creates a platform for the beginning of a more holistic approach to the barium enema. The resultant effect being a move away from the reductionist view that radiography can be seen to have throughout its practice. The reference being made here can be demonstrated simply from statements that it is common to hear in the X-ray department such as:

> 'There's a foot outside' or 'there's a wrist waiting'
>
> (Culmer, 1995 p1)

The radiographer, by this simple statement, is showing that they are only considering the particular part of the patients' anatomy that is in need of an x-ray or their expertise. They are not concerned with the patient as a person. This attitude is very common amongst radiographers, and they do not mean any disrespect to the patient by it. General radiography by the very nature of the work and the speed in which it needs to be done lends itself towards this attitude. Radiography is classed as a 'caring profession' however in most x-ray examinations the time spent with the patient is minimal and there is little actual 'caring' done. In many hospitals the quicker a radiographer can complete

an examination the more highly they are regarded because the workload is so great there is simply not time to waste. Here the question posed is simply 'Is it a waste of time to treat someone as a person?'. Another unique aspect to radiography as a caring profession, is that there is no opportunity to create a long-standing rapport with the patient, as they will not, in most cases, be returning. On the whole a radiographer has one chance in which they need to assess the person. They need to be able to decide quickly, how to approach and deal with them, and also gain their trust. Each patient is an individual and each radiographer needs to have the skill to instantly communicate with that individual on their level in a way that makes them feel at ease. This is a very important skill, however still does not deal with the patient holistically. It is more in line with the attitude of undergraduate medical teaching where:

> 'The doctor is taught to 'home in' on the specific area of physical or psychological pathology, identify it precisely and then attempt to correct it.'
>
> (Short, 1994)

The move of radiographers into roles such as that of performing barium enemas however, is indicative of a changing role. With it there is the potential for radiographers to become more holistic carers as they have greater responsibility for patient management.

2.5 Context of the current study

The barium enema itself has been described and the potential for the future of large intestine imaging has been discussed. The physical circumstances associated with the examination have been addressed, but the effect on the patient as a person needs to be considered.

3. Literature Review

Ferguson (1988), a nursing educationalist, felt compelled to write to the Nursing Times after experiencing a Barium Enema at first hand,

> '..one has to be well, to withstand the physical and emotional indignities inflicted. This is no investigation for the physically or mentally frail...The initial information was confined to technical matters. This subsequently changed into short precise demands to alter my position on the table constantly... in the end I was left on my own to cope....The room was full of young men engrossed in taking pictures ... they appeared to regard the constantly turning body on the table as a depersonalised object. The women technicians on the other hand, huddled away in corners, talking animatedly about their previous evening's social encounters, plans for holidays and, unbelievably, sumptuous meals they were planning...I felt acutely vulnerable...suddenly after 45 minutes, everybody simply disappeared without saying a word....'.

This describes the barium enema examination from a patients' perspective. It shows the staff involved being completely engrossed in their technical job, an area from which the patient is, quite obviously, completely excluded.

The description of being a depersonalised object with stark instructions and little dignity is discreditable to radiography as a profession. For Ferguson to feel that physical and emotional indignities were inflicted upon her, makes one consider professional conduct. This type of account should surely encourage radiographers to consider the quality of care given to patients in an x-ray department. It does, however, give a clear example of the power of the professional.

The psychological and sociological effects associated with hospitalisation is of direct relevance to this research as it highlights the emotional significance of having a barium enema. The literature reviewed concentrates on these areas, together with the effect of information, which is demonstrated through healthcare domains that have already addressed these issues in depth.

3.1 Professional Power

The Oxford English Reference Dictionary (1996) defines knowledge as: a person's range of information; specific information; facts or intelligence about something. It is a desirable state of mind for a large proportion of the general public. However, when one enters a hospital environment one will find that many of the general public within are without knowledge of the specific procedure that concerns them.

The social or sick role (Parsons, 1951) arose from the assumption that medicine offers effective treatment, and consequently that medical practitioners must be given the social status and resources to make sure patients follow their orders. It has been suggested by dominance theorists, (Young (1961), Zola (1972), Freidson (1975)) that this functions as a form of social control as it enables the powerful groups in society to promote their interests by exploiting or marginalising others. Marxist analysis of professional dominance questions its ethical character by emphasising the role of power and market control over the legitimising function of knowledge. Jamous and Peliolle (1970) suggest that the specialised knowledge of the professional creates the basis for prestige and social distance between the expert and the client. This is due to the fact that the client by definition is excluded from the esoteric knowledge of the professional association. Johnson (1982), argues that with increasing indeterminacy within the professional relationship, the social distance between the client and professional will increase resulting in the greater helplessness of the client in relation to the professional.

Professionalisation involves the exercise of social closure, the maintenance of autonomy and finally the development of bodies of knowledge that permit sufficient scope for interpretation. Thus, the result is that the patient or client remains relatively ignorant and subordinate. However, it must be noted that the status and power of the professions depend on their ability to maintain a market situation and access to appropriate clients (Larson 1980).

3.2 Hospitalisation

Hospitals are unpalatable to society at the best of times, due to the fact that the general public associate them with illness and death. Spiers(1995) makes a great point of the fact that what he sees as the four main professions that is; the church, the armed forces, the police or law and the medical profession, all have their focus on the things that are, he considers, most frightening to the general public:

'Death- which gives the churches their power.
The military threat - from which the forces keep us safe.
Crime and disorder - from which the law keeps us secure inside our fences, and.
Disease - from which doctors defend us...'

(Spiers,1995 p47)

The above is true and accepted, but it is suggested by the author, that the overall threat is that of one from death. It is death that appears to give these professions the fundamental power over those not associated with them. This, it is suggested, is due to them being seen either as healers or protectors and therefore fundamental to life and thus unquestionable in their actions.

When a person enters a hospital, they leave their normal life behind and take on the role of the 'patient' or 'client'. Hugman (1991) suggests that these terms are used deliberately:

'To convey these roles as the socially constructed objects of professional power'

(Hugman, 1991 p113-114)

The person is effectively in a state of limbo, which is characterised by a sense of vulnerability and danger as the patient has to adapt to their new passive role. As Alder (1995) states:

'The 'good' patient does not ask questions: he obeys instructions, makes no demands and never complains.... The 'bad' patient asks questions, demands attention and complains.'

(Alder 1995,p59-60)

Due to the nature of hospitalisation the person effectively loses their identity and is forced to comply with any directions given to them. They consequently undergo patient socialisation, which means they must learn their new role and what is expected of them. If they want information, they must learn who, when and how to ask for it (Bond and Bond 1992 p197). The patient has to learn what is acceptable practice in the hospital environment, otherwise, they risk a reprimand from the staff. The most extreme form of this structuring of life was termed 'the total institution' by Goffman (1968). He performed an analysis of life in large mental hospitals. Although the objectives were to treat the patients and to care for them, Goffman felt that they became places where the professionals shaped the identity of the patients through control of their daily life. The clinician needs to be aware that hospitalisation can affect patients' feelings of unease or anxiety about their abnormal social status (Helman 1990).

It is well documented that people undergo three main effects on entering a hospital environment: depersonalisation, regression and stress.

3.3 Depersonalisation

Depersonalisation can be defined as the 'alteration in the perception of the self so that the usual sense of one's own reality is temporarily lost or changed'. In the hospital setting it results as a consequence of; the patient being one of many, the numbering, loss of status due to the state of undress and not being the most important person (Coe,1978). It can be seen as a loss of self identity due to the impersonality of hospital care as experienced by Marsh (1987). Depersonalisation can be seen to be an adverse effect of organisational efficiency, where the communication technique and

management practices utilised, result in technical efficiency but neglect the psychological needs of the patient (Nystrom and Segesten,1996). A positive side of this is seen in the protection of the hospital personnel from emotional involvement, otherwise termed detachment (Carmack, 1997), and also as psychological protection for the patient when undergoing embarrassing examinations (Morley, 1997).

3.4 Regression

Regression is defined as a:

> 'Defense mechanism in which the individual retreats to an earlier developmental stage that was more secure and pleasant and/or the use of less mature responses in attempting to cope with stress'
>
> (Hjelle and Ziegler,1992 p133)

It occurs in the hospital setting as the medical jargon used can be perplexing, and treatment received may be beyond the patients' knowledge. Thus the medical staff are providing for the patient who is therefore becoming childlike. They have to rely on others, and conform to the set routines such as taking medicine and eating when told. The independence that they are used to in normal everyday life is taken away from them. This is demonstrated by adults asking medical personnel questions such as:

> 'Can I have a bath....or Can I use the telephone'
>
> (Bond and Bond,1986 p197)

In this situation the person loses autonomy. They have to function completely within the hospital and are dependent upon the medical staff. This can be likened to a child who depends on its mother to feed it and tell it what to do. In itself this can be a source of considerable malevolent stress.

3.5 Stress

Stress can be defined as 'the sum of physical, mental, emotional, internal or external pressures'. In hospital it occurs from actually just being a patient. This role involves a lot of waiting, whether in a waiting room for an examination or in a bed waiting for results. Stress is often through the patient not knowing what to expect. They do not know whether they will be cured, need an operation or face death. Other causes of stress are experienced which are not directly attributable to their condition or treatment. Their job, family or home could be responsible for causing them stress. Stress can also be seen to change. For example, when patients are admitted, the worry may be that their home will be burgled as it is empty. Whereas, when their discharge is impending, the worry may be about how they will contend with difficulties at home. (Bailey and Clarke, 1989 p178-179).

The trend is now to some extent moving away from keeping the patient in the dark, uninformed. Healthcare professionals have begun to recognise the rights of the patient, and are moving towards responding to patients questioning.

> 'Most patients with a potentially terminal disease wish to be fully informed about their illness and its management'
>
> (Reynolds et al, 1981)

Fulfilling the patients' request to know what is involved with procedures, empowers them to have a say in their own management (Anon, 1998). However, when one enters a hospital environment one will find that many of the general public within do not have knowledge of the specific procedures that concern them (Audit Commission, 1993). This can affect how they feel about attending the hospital.

> 'The goal should be to maximise the patients' autonomy as much as possible'
>
> (Purtilo and Haddad,1996 p44)

This will give the patients a feeling of being more in control, and will have some kind of positive effect on any negative feelings. A common negative feeling in the hospital setting is that of anxiety. The following section will define this emotion in an attempt to show the underlying reasoning for people exhibiting this emotion.

3.6 Anxiety

3.6.1 Definition of the emotion

Anxiety is one of the basic emotions in human beings. It is classed as a negative emotion, and it is this type that is usually adopted when the object of someone's efforts or their needs are unfulfilled. Emotions have been given functional values of which Rolls (1990) summary is shown below:

'1. They elicit autonomic and endocrine responses that have survival value,
2. They permit flexible behavioural responses to reinforcing stimuli,
3. They have motivational properties,
4. They contribute to communication,
5. They facilitate social bonding,
6. They promote activities which have survival value,
7. They affect the cognitive interpretation of events, promoting consistency of interpretation, and,
8. They permit the storing of memories in emotionally tagged form'.

(Rolls, 1990)

It is these functional values that are of use in the clinical setting. Much research has been undertaken in the area of emotion management. In anger management, work has been carried out in the area of 'skills acquisition' which is seen as a means of attacking the hypothesised problem. Fear of the unknown, or more simply a lack of knowledge and understanding of the barium enema procedure is the hypothesised problem for this

research. Following the method described above, this research endeavours to attack the problem by giving patients the potential to acquire the knowledge that they need. As Niven and Robinson (1994) inform us:

> 'In many circumstances where patients are facing some kind of stress, a knowledge that they have some element of control will often help to dilute anxious feelings.....patients do not have to have actual control, but they do have to feel or think that they have some control or else stress and anxiety will usually follow'.
>
> (Niven and Robinson, 1994 p300)

The theory of anxiety neurosis formulated by Freud in 1894, prompted common use of the word anxiety in psychological literature. Great efforts have been made to measure the condition which have resulted in excess of 120 personality tests being developed. There is still however, dispute over the definition of the actual word. The most frequently cited definition is that of Spielberger who states:

> 'Anxiety is a transitory emotional state or condition characterised by feelings of tension and apprehension and heightened autonomic nervous system activity'.
>
> (Spielberger, 1972)

Cattell and Scheier (1961), were thought to be the first to identify two types of anxiety. The distinction was made between stable personality traits and emotional states. It is necessary to distinguish between the two different types of anxiety in terms of this research and the anxiety caused by a threatening medical event, i.e. a barium enema. The types are defined as State anxiety and Trait anxiety, and although it is said to be Cattell and Scheier whom first distinguished between them, Spielberger is credited in the literature for articulating the differentiation. Spielberger (1966), defined state anxiety (A-state) as:

> 'Transitory emotional reactions that consist both of subjective feelings of tension, apprehension, nervousness and worry and of heightened autonomic nervous system activity...'
>
> (Spielberger, 1966 p95)

And defined trait anxiety (A-trait) as:

> 'A motive of acquired behaviour disposition that predisposes an individual to perceive a wide range of objectively nondangerous circumstances as threatening and to respond to these with state anxiety reactions disproportionate in intensity to the magnitude of the objective danger...'
>
> (Spielberger, 1966 p17)

Spielberger in later work used the analogy of kinetic energy to potential energy, stating that:

> 'State anxiety is like kinetic energy - a reaction taking place now at a level of intensity, and trait anxiety is analogous to potential energy - a latent disposition for a reaction to occur if triggered by appropriate stimuli'.
>
> (Spielberger, 1972)

The two types of anxiety have been defined, however, what is behind their manifestations within the clinical setting is important in terms of this research. Thus the next section will develop along this theme.

3.7 Anxiety in the Clinical Setting

A person with a high level of trait anxiety is thought to be more inclined to perceive a non-dangerous situation as threatening than a person with low trait anxiety. In general terms though, anxiety is regarded as a combination of negative emotions. The many and complex faces of anxiety combine to give great difficulty for us to accept one definition that covers all of its manifestations. However, from a clinical radiography perspective the terminology is not significant. Every radiographer is aware that their patients are accustomed to the word and its meaning, and have probably experienced it and also, that they would rather avoid it if possible. The problem that the radiographer

faces, is the need to be able to recognise anxiety in the patients and also to be aware of situations that may provoke it.

A hospital environment provokes anxiety in patients for various reasons. Loss of health, association with death, potential pain, fear of the unknown and the detachment from normal everyday society are all potentially anxiety provoking. To a radiographer however, the hospital is a familiar place of work that is non-threatening. The task for the radiographer therefore, is to dissociate themself from their own opinion of what is anxiety provoking, and accept that which patients consider to be anxiety provoking. Henderson (1985), in his paper 'On being a patient' states:

> 'As far as the radiographer is concerned, it is vitally important to appreciate the communication signals being given out by the patient and for the signals to be understood'
>
> (Henderson, 1985)

It must however be recognised, that each individual has different ambitions and expectations of life and this needs to be appreciated within the hospital environment. Marsh (1987) in an article on his experiences of being a patient explains how angry he was made to feel by the simple statement 'I know how you feel'. A statement indicating that the person was trying to appreciate the situation would have been much better received and given him as a patient the opportunity to explain how he did feel.

Dwane (1993), implores the importance of radiographers improving their communication skills and recognises the need for understanding the concealed or secret needs of patients. She also notes the valuable use of non-verbal communication, and stresses the need to take age into account when interacting with patients.

In this research study, it is hypothesised that the focal anxiety instigation is the barium enema examination. It is accepted by the author that there may be different sources of

anxiety that have no relation to the barium enema itself such as the fear of cancer itself, however, this research focuses on the effect of information on state anxiety.

3.8 Information

A feeling of not being kept informed is great source of dissatisfaction among patients (Cartwright 1964, Reynolds 1978). Waitzkin and Stoeckle (1972) suggest that through their conscious or unconscious control, professionals create feelings of uncertainty and anxiety in patients and also make them feel ignored when they are actively seeking information. Slack (1976 in Bond and Bond p225) states that restricting information to the patient is to deny them responsible status. This leads to the implication that the patient is incapable of intelligent choice and self control. Supplying insufficient information to the patient is therefore, another way of exerting professional power (3.1).

Government policies suggest that the patients' needs will always be put first. The political commitment is reflected in 'Working for Patients' (Department of Health, 1989) which states:

> 'All proposals in this white paper put the needs of the patients first.....
> We aim to extend patient choice.....
> The patients needs will always be paramount...'
>
> (Department of Health, 1989)

However it appears that we are still keeping a rather closed door operation on informing patients, John Spiers in his text entitled 'The invisible hospital and secret garden', states:

'Our most essential imperative is truly to believe that our patients are the owners of the service, and that truly to satisfy our customers is a requirement, not a purpose alone..... we must abandon the secret garden notion of mystery in medicine'.

(Spiers, 1995 p47)

If we take away the mystery of the hospital and the examinations, then we should take away the element of the unknown that is a consequence of it. Therefore, patients could attend the hospital in greater mental comfort. Niven and Robinson (1994) looking at pain and stress from a biopsychosocial approach state that:

'Research has found that people who feel that they have little, or no, control over events in their lives experience high levels of stress and anxiety. One factor that has been found to increase people's sense of control is predictability'.

(Niven and Robinson, 1994 p299)

Wilson-Barnett advocates that:

'A clear chronological account of what will happen, how long it will take, where it will be performed, and the type of equipment to be used is now recognised by researchers and professionals alike as a minimal requirement'.

(Wilson-Barnett in Johnston and Wallace,1990 p90)

It may be, that the above is recognised. However, the matter of whether it is being implemented in practice is an issue which needs addressing. Surgery and Oncology are two specialties in healthcare that are well documented in the areas of information and anxiety. The literature will be reviewed to assess the benefit of informing patients on their anxiety and determine the value of this research.

3.9 Anxiety and Information in Surgery

Considerable research has been undertaken regarding information giving to patients due for surgery. Leaflets describing specific details of operations have been found to be beneficial and increased patient satisfaction (Bunker 1983, Edwards 1990, Williams 1993). Information concerning the after effects was demonstrated to be important in a study by Corney et al. (1992). One hundred and five patients who had undergone major surgery for carcinoma of the cervix or vulva in the previous five years were interviewed. A high proportion of their sample were found to be depressed and reporting chronic sexual problems. Both the patients and spouses indicated that they would have liked more information on the after effects of the operation, including physical, sexual and emotional aspects. Detailed information about the risks of surgery was shown to have a statistically significant degree of reassurance (Kerrigan et al. 1993). This was demonstrated using Pearsons correlation coefficient, a mean anxiety score at baseline was 34.6 and after information was 32.2. This evidence suggests that patients would generally prefer to have more information available to them.

Investigation of state and trait anxiety in dental patients (Liu, Barry and Weinman, 1994), showed postoperative state anxiety to be significantly correlated with postoperative pain. This finding is however thought to be causal, but it is highlighted by the author that a causal relationship cannot be established from a correlational analysis. This however, correlates with findings by Watson and Pennebaker (1991), which show that individuals high in negative affect, particularly anxiety, are more likely to have a lower pain threshold and hence more likely to report high pain levels. There is a significant amount of literature to support the view that increased anxiety is associated with increased reports of pain (Melzack 1973, Sternbach 1968 and 1974, Krishnan et al 1985, Walsh 1993, Arntz et al 1994). Arntz et al (1991), investigated the effects of incorrect pain expectations on acquired fear and pain responses.
It was found that:

'Discrepancies between expected and experienced pain play a role in the development of anticipatory responses and that this effect cannot be reduced to the effects of the experience itself'.

(Liu, Barry, Weinman, 1994)

Correlations were generally not found between preoperative anxiety and postoperative recovery.

Williams et al (1972), observed that high anxiety leads to an increased requirement for anaesthesia, which confers an increased risk of death. Johnston (1980), stated that pre operative anxiety predicts aspects of postoperative recovery and emotional state, and that procedures to reduce preoperative anxiety will produce postoperative benefits. Brown (1990) investigated the anxiety experienced by patients undergoing surgery for renal calculus disease. It was found that pre-operatively, fear of general anaesthetic was a main factor and post operatively, pain was the most commonly identified stressor. Careful pre-operative explanation was found to reduce stress. Studies into the effect of information giving to surgical patients (Egbert et al 1964, Leigh et al 1977, and Elass et al 1987), suggest that a positive correlation has been found between pain and postoperative state anxiety. Reassurance and education given by the anaesthetist in the preoperative visit and followed up postoperatively may help to reduce postoperative pain.

It is therefore being suggested that patients need follow up after the 'event' to assess the consequences from the surgery. This contact 'post event' is not commonplace in the diagnostic radiography field. Radiographers are seen as more 'hit and run' carers, who are concerned solely with the examination, and are not concerned with the patient once they have completed the procedure.

3.10 Anxiety and Information in Oncology

Research undertaken with oncology patients showed that they had a great need for information.

> 'Most patients with a potentially terminal disease wish to be fully informed about their illness and its management'
>
> (Reynolds et al, 1981)

Peck (1977), Forester (1978), and Holland et al (1979), all document the depressive affect and anxiety that patients in radiation therapy suffer. Cassileth et al (1980), found that many patients had inadequate information about their treatment, and that the majority of patients in the study desired more information. Rainey (1985), tentatively suggests that by addressing the information needs of radiation therapy patients' health professionals will fulfil two important duties. Firstly, a basic responsibility to the patients, and secondly, support important cognitive strategies which will enable patients to cope more effectively with treatment related stresses.

Rainey (1985), in a study examining the effects of preparatory patient education for radiation oncology patients, looked at the impact of an audio-visual program. It presented procedural and sensory information about radiotherapy on the patients' treatment related knowledge and affective status during their radiation therapy. The study concluded that the patients who were shown the program showed significantly greater treatment related knowledge and less emotional distress.

Manfredi et al (1993), investigated the extent to which the cancer service is used. This study demonstrated that in order to be useful, the information had to be sought by the patients themselves, and that physicians had not made sufficient information available. The two main needs identified by the patients were:

1. To understand the disease thoroughly.

2. To be sure that they were following the best course of action for their cancer by having explored all possibilities.

This study indicated that the patients feel that they are not being given all the necessary information. It shows direct relevance to this research in that some patients are actively seeking information and feel that they are being kept in the dark. Frith (1991), however, reminds us that although more information is required in this side of radiography (radiotherapy) there is an individuality of information needs and thus individual assessment is paramount in this context.

3.11 Summary of information in Surgery and Oncology

Information about the procedure or treatment that affects an individual has been shown to be beneficial in terms of satisfaction, reduction in stress and anxiety. Three areas have been shown to have particular importance.

1. The effect after the procedure
2. The choice of the extent of information
3. The type of information

The area of information and communication will be addressed in light of the above points to assess the various forms of information available and their pertinence to the barium enema procedure and radiography.

3.12 The Form of Information Given

> 'It may not be possible to cure people with serious illnesses but the stress that occurs from patients not knowing what is happening to them can be reduced by the use of good interpersonal skills'.
>
> (Niven and Robinson, 1994 p300)

The form of the information or the coding of the communication that is given to the patients has been seen to be significant in terms of the successfulness of the communication. There are two main forms of communication namely oral, and visual, the latter of which is divided into two parts, written and pictorial. If oral communication is to be successful then it needs to be at the level of the person to whom it is directed. It is often said that:

'Communication lies at the heart of the problem'

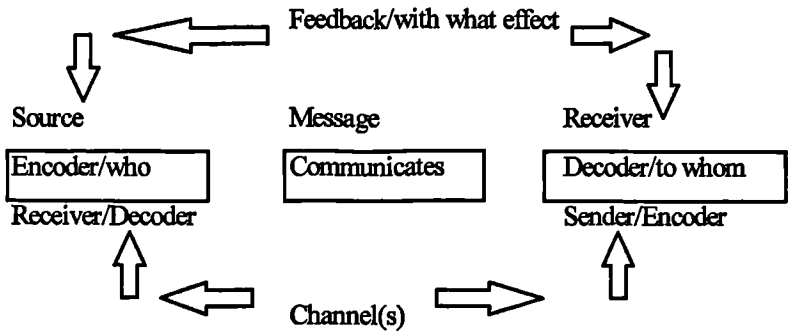
(Hawkins, 1979)

There are many reasons for ineffective information and communication within a hospital environment. For example; professional power - making staff appear unapproachable, lack of staff time due to an overload of work, lack of experience, or lack of thought due to things being so routine. Healthcare professionals, however, need to make a distinction between subjective and normative information needs of their patients. The expert knowledge of the healthcare professional, includes an inherent understanding of the needs that are desirable for a particular patient group. Although this information will thus be formulated by someone out of the group it will stimulate awareness and may encourage discussion. On a professional level:

'It is important, for examinations requiring co-operation, that tasks are clearly defined and recognised and that good communication exists between professionals to facilitate consultation and discussion of problems'

(College of Radiographers, 1989)

Communication theory has provided many complex models to aid in the understanding of information giving. The simple model when one person is communicating information to another person is suitable in this context. See model below.



(Adapted from: Bradley and Edinberg, 1990,p6)

The sender is the information provider, in this case it would refer to the radiographer. The information is transferred as a message. The content of this message can be coded through various signals, either written words or pictures or spoken words. Various channels can be used to send the information. Examples are, orally face to face, visually by a written leaflet or a video, through a spoken tape or more recently through CD-ROM interactive computer based packages. The receiver who in this case would be the patient, is supposed to receive the message and decipher and understand it as the information that was sent by the sender. In reality the area from immediately after the sender to the receiver is abundant with potential complications that can alter or reduce the effectiveness of the information. The complications can arise in any of the areas between sender and receiver. The message itself can be not specific enough, the signal may not be understandable and the channel may be inappropriate and unsuitable for the particular patient. Complications may also arise due to the receiver having for example a language barrier, a sight or hearing problem, or through anxiety or fear. It must be taken into consideration that:

> 'Patients are unique learners; their ability to comprehend health instruction is often impeded by factors such as anxiety (3.6), physical discomfort, and unfamiliarity with the hospital environment'
>
> (Estey et al, 1994)

The sender must therefore monitor the communication process to ensure that the information is received and understood in the manner in which it was meant. The easiest way to achieve this is to use open communication (with feedback) as opposed to closed communication where the receiver is not given the opportunity to feedback. This allows the sender to continuously review whether the information is being understood.

> 'In effective communication this feedback - checkout loop can prove the most important step of all'
>
> (Porritt, 1990 p24)

In the hospital setting there are three main types of information interactions:-

First, there is giving information to patients - where information is given to patients but little attention is given to how the information is received (Such as sending information out to patients in the post).

Second, can be described as teaching patients - where information is given to the patients and interaction occurs.

Finally educating patients - where the information is given, interaction occurs and the information has an effect on the patient whether it be a change in behaviour or attitude. For example:

> 'Colostomy patients, for example, must be taught to keep the area around the stoma clean, to protect the skin from infection, and to change the bag.'
>
> (Smith and Bass, 1979 p181)

Often patient teaching and education are used interchangeably, however it should be recognised that patient teaching is only one component of the patient education process (Rankin and Duffy,1983). There is a large amount of information contained within the health care system about patients. This has been acquired from many different sources,

both internal and external, from formal and informal discussions and from professional and non-professional people. There are very well structured routines in hospitals for acquiring, storing and retrieving information about any particular patient. This information is generally not obtained from the patient themselves. However, healthcare professionals are beginning to become more aware of the valuable information that can be obtained from the patient, especially concerning psychosocial matters. Information from the patient does not have the extensive structured routines of the internal hospital information such as examination results. However, in countries such as Sweden (Health and Medical Service Act, 1982) patients are being given a more active role in their care in hospital.

In the hospital environment it has traditionally been the role of the doctor to provide the patient with the information they need. This role is undisputed as far as diagnosis, symptoms, prognosis and treatment information are concerned. However, when the information is concerned with a particular test or diagnostic procedure it would seem to be logical to give this task to the expert in that field. By doing this they will be best able to fulfil the information needs of the patient (Dowd and Ott, 1998). It is recognised within the healthcare profession, that an informal information structure exists outside the medical profession based on experience and hearsay of relatives and friends which is not necessarily first hand. The class of this information is therefore not always of the highest quality and may serve to fuel anxieties as imaginations become carried away. This type of information is also on the whole believed, and therefore it can be difficult to convince the person otherwise. If however patients are informed through the healthcare professionals then it is less likely that they will use informal information.

Written communication within healthcare is an area which provides accessible information. It also allows the patient to choose when they wish to use the information. There are however, many areas that need consideration in this form of communication. Medical jargon and technical words are to be avoided if possible and the length and structure of sentences also need consideration. Written words also need to follow the

same sort of guidelines as this form of communication can be monitored more easily. A number of readability indexes have been developed which check the level and understandability of the written communication. Gunning (1945) with the FOG (frequency of gobbledegook) index and Flesch (1948) with the readability yardstick were the initiators in this field, their aim being to understand government documents. The SMOG (Standard Measure of Gobbledegook) formula was a later development (McLaughlin, 1969). These indexes have held the test of time and are still used today. They are based on a simple scoring system that involves counting sentences and words.† However, there is no substitute for patient assessment and acceptability.

Written material for use in health care should be as informal as possible and attention needs to be paid to details of layout and presentation. This leads into the use of pictorial communication. A commonly used phrase is that 'a picture paints a thousand words', this is very true if the picture is a good one. Carefully chosen art work in a patient information leaflet can communicate to the patient much more effectively as well as making the leaflet more aesthetically pleasing. Meade and Smith (1991) class visual appeal and legibility as important as text style and layout. It should be recognised that:

> 'The best leaflets are simple communications which reflect the particular needs of their target population'
>
> (Petterson, 1994)

Weinmann (1990), investigated the psychological considerations of providing written information for patients, based upon research showing that there is a poor quality of written and verbal communication in the medical area. Written information was shown to be beneficial producing definite increases in patient knowledge and levels of adherence to antibiotic and long term drug taking. The differing needs of individual

† READABILITY TESTS HAVE NOW BEEN INCORPORATED INTO COMPUTER PROGRAMS, INCLUDING MICROSOFT OFFICE WORD WHICH HAS BEEN USED FOR WRITING UP THIS THESIS.

patients in the amount and type of information required was also taken into consideration.

> 'Leaflets are, useful for many minor and major tests, as long as they are explicit, use everyday language, and encourage patients to ask for more details if they wish'
>
> (Wilson-Barnett in Johnston and Wallace, 1990 p91)

With the information in the written form, the patients are able to choose the level and amount of information that best fits in with their needs. Furthermore they can choose the extent to which they make use of the information. It must not however be forgotten that written information is not a substitute for (oral) communication with the patient, Weinman (1990). The idea here is one of empowerment which is defined as:

> 'An educational process designed to help patients develop the knowledge, skills, attitude and degree of self - awareness necessary to effectively assume responsibility for their health - related decisions'.
>
> (Feste and Anderson, 1995)

The reference that is being made above is to the control of the individual on the information that they are given. If the individual has the opportunity to re-access the information then the resultant effect will probably be more pronounced. If however the information is communicated orally in a once off fashion then the recall of that information will almost certainly be low (but the psychological benefit of verbal communication is acknowledged). If the information is recorded on a tape which can be replayed or a leaflet, video or computer that can be looked at again then there is opportunity for the individual to gain as much as possible from the information. North et al (1992), investigated the use of an audio tape recorder to tape counselling and information giving about oncology. It was found that patients who had their consultation taped and were able to take it home had significantly reduced levels of anxiety and retained more information. It must be recognised that information must be tailored to the patient's particular needs.

Computer Assisted Learning (CAL) packages are one of the newest forms of informing and teaching people. This form of information-giving has the advantage of being re-used by many individuals if a computer terminal is made publicly available, however, the users need to be reasonably computer literate. Nursing literature suggests that:

> 'It will have a major impact not just on nurse education and training, but also on healthcare education and ultimately on the delivery of health'.
>
> (Gleydura et al, 1995)

Lewis (1986), suggested that by providing the patient with information prior to his visit to the hospital, the fear of the unknown and feeling of being completely at the mercy of the medical personnel will subside and the patient can attend in some psychological comfort. Thus it is the need to provide the patient with the relevant information at the right time that is of paramount importance in making the hospital visit less traumatic.

The use of patient information in radiography and the effect on anxiety will now be addressed.

3.13 Radiographic Procedures, Information And Anxiety

Previous studies that have looked at patient information regarding radiographic procedures and treatment, concluded that patients who have specialised procedures wanted to receive information and that having an awareness of the procedure did not increase their levels of anxiety.

Vantoch-Wood (1986), completed a survey concerning explanatory literature in the x-ray department. The results from this survey showed that very few centres offered written explanations of the procedures, time taken, reason for preparation, after effects

or where the results would be sent. Patient views were not however considered in this survey.

Baker (1992), carried out a questionnaire based survey to assess the effect of information leaflets on the level of patient anxiety. Information sheets were designed for four specific types of diagnostic examination. It was found that anxiety was significantly reduced in those patients who received information. The result was most prominent for the most stress inducing examination and that even if anxiety was not reduced, the patients were reported to be grateful for having been kept informed.

The Audit Commission report on radiology services (1995), commented that some patients wanted more information about why they needed an x-ray or scan and what would happen during and after the examination. The code of professional conduct states that:

> 'Radiographers have a responsibility to promote and protect the dignity, privacy, autonomy and safety of all patients with whom they come in contact'
>
> (College of Radiographers, 1994)

It has therefore been demonstrated that patients wish to be kept informed and also that it is a professional duty to do so.

3.14 Patient Experiences in Radiography

It is also suggested that as well as keeping the patient informed the actual person themself needs consideration. Howard (1992), found her Barium Enema experience harrowing, undignified and without sufficient information.

Steine (1993), in a study of patient's experience of pain in Barium Enema examinations, showed that if patients are informed about the examination they are more likely to comply with instructions. This together with a little more consideration on the radiologist's part, could make the examination a lot more pleasant.

Studies investigating information and emotional responses in gastrointestinal radiographic studies, have concluded that well-informed patients have significantly lower levels of anxiety. Wilson-Barnett (1978), in a study of patients undergoing barium meals and enemas, gave patients the information verbally and then in the written form, a control group was simply spoken to for the same length of time without being given the information. Results showed that barium meals are much less anxiety provoking than enemas and therefore there was no difference between the experimental and control groups. However, the barium enema patients who had received the information had lower anxiety levels during the examination. Hartfield and Cason (1981), conducted a study on 24 barium enema patients, placing each in one of three groups that received either taped sensation or procedural information, or no information. The patients completed the trait part of Spielbergers State Trait Anxiety Inventory (STAI) before the barium enema and the state part after the barium enema. Those receiving the sensory information had significantly lower anxiety scores than those in the other groups; this shows that the nature of the information given to patients must also be seen to be important.

Pieper (1992), demonstrated that out patients undergoing a barium enema awoke more frequently and had poorer sleep scores the night before the examination. They also felt that they had greater energy expenditure during the examination than others participating in the study, which included patients undergoing upper gastrointestinal tract investigations and non preparation x-ray procedures. She concluded that information should be given before the preparation is begun rather than on the morning of the examination.

It was also suggested that ET nurses are:

> 'In an ideal position to develop and conduct research studies on diagnostic procedures'
>
> (Pieper, 1992)

The published evidence suggests that the barium enema is an anxiety provoking examination, which has suffered strong criticism from both the general public and a healthcare professional. It is however still regarded as the best method of visualising the large intestine. In the published research, the overwhelming suggestions relate to informing the patient in the correct form and at the correct time to reduce the level of anxiety experienced by the patient.

The next chapter will lay out the structure of the research and describe the methodological design and underpinning of the research.

4. Methodological Considerations

This research is a longitudinal study spanning the full extent of the barium enema examination, taking each part into consideration. The data have been collected from actual barium enema patients, and it is their views that have shaped its direction. The research has chronologically, followed the process of the barium enema examination in a logical manner, beginning with informal interviews of patients' who had not yet experienced the examination. This was followed on by focused interviews with patients who had experienced a barium enema. The data gathered from these interviews formed the basis for developing the information sources for patients that were felt would benefit future patients. One information source (an information leaflet) was adopted for use with a further set of patients; the other (a computer programme) was felt to require testing on potential patients, before being used on actual patients. The effectiveness of the information leaflet was tested via questionnaires with barium enema patients before and after their examination. The final part of the research followed up patients from the questionnaire study to investigate after effects of the examination.

This chapter will discuss the methodological considerations that underpin this research. An overview of the qualitative, and then quantitative, aspects of the research design will be presented. Reliability and validity and their relevance to each paradigm will be discussed. Ethical issues will be addressed. Methodological triangulation will also be described with relevance to this research.

4.1 Methodological Design

The design of this study has its basis in professional knowledge and experience (from observations made by the researcher as a student and a qualified radiographer) as well as literature from both healthcare professionals and the general public. This incited the author to explore the area further to gain an insight into the barium enema examination

experience from the patients' perspective. It was felt that there was a communication gap in the barium enema examination between the patient and the radiographer until the patient was in the x-ray room. This gap opened once again when the examination was over and the radiographer instructed the patient that they could go home. As radiography is a caring profession, it is felt that a holistic approach to the design of research involving patients or procedures is crucial.

Thus, the aim of this research is firstly to gain an understanding of the barium enema examination from the patients' perspective. This is in an effort to improve the researcher's comprehension of the whole barium enema experience. If the patients' express dissatisfaction and indicate areas for improvement, this will be used to directly change practice in an effort to improve the experience for the patients. Assessment of the interventions will then be carried out. The paradigms will now be discussed and their relevance to each stage of the research.

4.2 Research Paradigms

Qualitative research is defined as:

> 'A systematic, subjective approach used to describe life experiences and give them meaning.'
>
> (Burns and Grove, 1993 p777)

The preliminary phases of the research thus indicated the use of a qualitative approach, as it is an inductive and descriptive method, which has great significance on meaning and interpretation. It has particular relevance to this research which has the discovery of the meanings attached to patients' experiences of the barium enema examination as its focus. The researcher's views are not relevant; rather, it is the views expressed by the

patient that are important. Qualitative research recognises the individuality and depth of each persons perceptions of each particular event.

Quantitative research is defined as:

> 'A formal, objective, systematic process to describe and test relationships and examine cause and effect interactions among variables'
>
> (Burns and Grove, 1993 p777)

The qualitative phases of the research highlighted several areas for concern; these areas were used in the design of a quantitative method to test the developing hypotheses. The qualitative research can be seen as unearthing the research problem and consequently the purpose:

> 'The problem identifies an area of concern for a particular population and often indicates the concepts to be studied...The purpose is generated from the problem and identifies the specific goal or aim of the study'.
>
> (Ibid, p 42)

The research had thus exposed areas that it was felt needed exploration. The interrelationships and interactions of areas of concern needed systematic testing which thus indicated a quantitative approach, which has its emphasis on theory and experimentation, being a deductive and positivistic method.

This approach is relevant to the central phase of the research as this aims to test the relationship between information or knowledge of the barium enema examination and anxiety experienced by the patient. This positivistic approach tests the hypotheses and controlling variables in an objective manner, and allows for generalisability of the final results.

To be worthwhile and useful, any research performed needs to be reproducible, any method used to measure data therefore, needs to be consistent and repeatable whilst also being true and accurate. In essence this is the requirement of a piece of research to be reliable and valid. This is of importance whatever paradigm is used, and the following section will discuss this area with relevance to both quantitative and qualitative research.

4.3 Reliability and Validity

The reliability of a method is defined as:

> 'The extent to which it is free from random error components'
>
> (Judd, Smith and Kidder, 1991)

whilst validity is defined as:

> 'The extent to which a measure reflects only the desired construct without contamination from other systematically varying constructs'
>
> (Ibid, 1991)

Whilst both of these constructs are used concurrently in research it is important to recognise that a measure can be obtained that is reliable but not valid. However, a valid measure is not useful unless it is reliable. Therefore it is vital to obtain both reliability and validity for a research study.

Random error components such as a simple ticking of the wrong box by mistake are tested for by carrying out the test after a time delay, this test-retest correlation gives a measure of the reliability of the study tool. In essence this is a simple procedure to carry

out however, in practice it can be very difficult and time consuming to repeat a measure. Internal consistency is another test of reliability; it uses the concept that:

> 'Random measurement errors vary not only over time but also from one question or test item to another within the same measure...differences (i.e., lack of correlation) among specific items can serve as the basis for an estimate of the influence of random errors'
>
> (Judd, Smith and Kidder, 1991 p51-52)

Thus, if the random error is great then some scores will be high and others low i.e. low correlation, but, if there is little random error then the scores will be on a par i.e. they will show a strong correlation. This is however only true if the measure is also valid, as if the measure has systematic errors then the correlation may well be low.

The above is relevant to the quantitative part of the research. Qualitative research however does not lend itself to these constraints. This is illustrated by Haase and Myers (1988) as a reflection of the difference in the purposes of the two paradigms, qualitative striving for theory generation whilst quantitative strives for theory confirmation.

Lincoln and Guba (1985) developed a four-point construct, which is more appropriate for the qualitative approach:

- Credibility - demonstration that the research was conducted such that the subject was accurately identified and described.

- Transferability - demonstration that the results of the research are applicable in other contexts, or for example can be generalised to other x-ray examinations.

- Dependability - demonstration of the ever changing environment and therefore the problems associated with replication.

- Confirmability - demonstration whether the results of the research can be confirmed by other research

Many other authors have deliberated many different terms to be used as appropriate concepts for the qualitative validity and reliability. However, Hinds, Scandrett-Hibden and McAulay (1990) suggest definitions that encompass both the quantitative and qualitative paradigms and would therefore be pertinent to this research which uses both.

> 'Reliability - Repeatability of scientific observations, and sources that could influence the stability and consistency of those observations, have been identified and evaluated.
>
> Validity - Findings reflect reality, and the meaning of the data is accurately interpreted.'
>
> (Hinds, Scandrett-Hibden and McAulay, 1990)

4.4 Ethical Issues

Ethical considerations are a part of our everyday lives. As a professional radiographer there are specific documented codes of professional practice and conduct that must be adhered to. In research the same respect must be given to the participants and consideration should be given to the effect of the research on them.

The vulnerability of the patients participating in this study has been recognised. The effect of being in a hospital has been explored in the literature, as has the concept of anxiety, both of which are at the focus of the research. Care has been taken throughout all phases of the research to inform patients of the study design and the opportunity given for them to cease to take part at any time without any detrimental effect on them or their management whilst in the hospital.

> 'Qualitative nursing research is more intrusive than quantitative research, so the researcher needs sensitivity and communication skills.... A sensitive researcher does not leave the patient anxious or worried'
>
> (Holloway, 1992)

In the quantitative phase of the research the researcher consciously distanced themselves from the patients in an effort not to influence their taking part. The qualitative phases however were more difficult as the researcher is also a radiographer and as well as being committed to the research is committed to the well being of the patients, indeed the patients and their well being were the initial basis for the research.

Therefore, the role of the radiographer was there to be assumed if the role of the researcher was inappropriate at a particular time. The intertwining of the two roles although recognised as being unadvised was felt to be necessary in this research. In the first interviews, after the patients' views had been ascertained the researcher answered questions pertaining to the examination if questioned by the participant. In the interviews in patients' homes, again questions relating to radiography and the barium enema examination were answered.

The nature of the research and the researcher made these roles inextricable, and it must also be recognised that this combination is also inherent in the data interpretation. However it is felt to have been a strength rather than a flaw, as the process was self-conscious, as was the subjectivity in the data analysis. The bias thus produced was seen as a necessary sacrifice for the well being of the patients and the depth of the research.

Ethical approval was sought from the hospitals concerned. Regional ethical committees were approached and allowed the researcher access to the patients for all of the hospital based phases of the research (See Appendix 2 for ethics approval letters). The superintendents of the x-ray departments of each hospital also gave the researcher their co-operation and assistance with the co-ordination of the research.

4.5 Methodological Triangulation

This research has used both qualitative and quantitative approaches in a developmental process as the research unfolded through the preliminary qualitative work used to gain an understanding of the patients' conceptualisation of the barium enema. This was followed on with quantitative work used to test the developing hypotheses regarding differences in the levels of anxiety experienced by the patients with differing examination information.

The use of the two approaches in a single study is not new.

> 'The traditional dichotomy between quantitative and qualitative methods - a dichotomy with historic purpose that initially demanded segregation of methods to separate studies - is evolving towards a more neutral distinction, facilitative of the integration of methods.... The distinction serves little purpose and perhaps limits nursing knowledge, as the nature of inquiry itself necessarily melds the two traditions.'
>
> (Dzurec and Abraham, 1993)

Myers and Haase (1989) describe the integration as:

> 'Essential in furthering nursing science'
>
> (Myers and Haase, 1989)

They propose guidelines for the integration of quantitative and qualitative approaches. The first views the world as a whole with interactions between levels. From a radiography perspective this could be seen to encompass the different areas of radiography and the importance given to different perspectives of the whole essence of radiography. For example, the technical aspects of image quality, exposures, and equipment, or the caring aspects where the focus is on the patient and their well being. However to achieve a good standard of care and quality of examination, considerations need to be given on various levels. This leads to the assumption that as in clinical

practice, research should consider various levels to ensure a full and true representation of the area under research.

The second guideline states that:

> 'Both subjective and objective data are recognised as legitimate avenues for gaining understanding.'
>
> (Myers and Haase, 1989)

This illustrates the importance of giving equal value to all aspects of data, not seeing one methodological approach as superior, but giving each credit for their individual merits.

The third guideline purports the benefits of integrating both 'atomistic' and 'holistic' thinking throughout the research. This demonstrates the importance of combining the natural thinking of the radiographer, (who on one hand is reductionist in seeing 'a foot' or 'a barium enema' waiting but on the other hand cares for the patients well being) with the research methodology and technique.

The fourth guideline puts forward the importance of the 'concept of the participant', being recognised as being both the subject and the researcher. The importance and experience of the researcher as a healthcare professional needs to be recognised and seen as a positive contribution to the research.

The fifth guideline provides for 'systematic and controlled confrontation' which is seen to enrich the other four as it allows for all views and perspectives to be considered (Myers and Haase, 1989).

In this light, the combination of qualitative and quantitative approaches is seen as enriching the research, and addressing the research in a way that is allied to a caring profession.

'The consequences may be reflected in more unified investigative approaches, broader questions, different team compositions, and costs and benefits at the personal and organizational levels.'

(Myers and Haase, 1989)

Integrating quantitative and qualitative methodologies in radiographic research is thus seen as the way forward for developing a research paradigm for the profession. A combined approach has been shown to have wider vision and greater depth and encompasses the nature of radiography as a caring profession. It is for this reason that this intergration has been adopted for this research to enable the depth of patients' feelings to be discovered, and further to address the issues as the research unfolded.

The next chapter will describe the first stage in gathering information concerning patients' conceptualisation of the barium enema. This is in an effort to underpin the evidence set out in the literature and forms the basis for a longitudinal study.

5. First study

A series of semi- structured interviews took place at two hospital sites during March and April 1995. Fifteen subjects were interviewed in the X-ray departments prior to and after their barium enema examination. All subjects approached agreed to participate.

5.1 Aim of the Study

The aims of these interviews were:

(a) To establish whether the patients had received information pertaining to the procedure.

(b) To establish whether the patients were worried in any way about the examination.

(c) To establish the patients' needs and expectations

(d) To establish how the patients' felt about the examination

This study targeted patients on the day of their barium enema when they arrived in the X-ray department. This sample had experienced the preparation but not the actual examination before the first interview with the researcher. Each patient was asked to participate in a further interview after their barium enema.

Subjects were recruited on the basis that they should be over eighteen years of age and attending for a barium enema examination during the set time period. Exclusion criteria were minimal, as any adult who consented would be included. For ethical issues refer to 4.4 and appendix 2.

5.2 Subjects

Informal interviewing patients attending for Barium Enema (n=15)

(a) District General Hospital (n=10)

(b) Community Hospital (n=5)

5.3 Procedures: Interview Structure I

The interviews were semi-structured in an attempt to study the patients' conceptualisation of the Barium Enema examination, and their anxiety with the least bias through interpretation of qualitative data. It was felt imperative to have the patients' perspective central to the study. The intention was to elicit a rich conversation from the patients, but one that was:

> 'initiated by the interviewer for the specific purpose of obtaining research relevant information and focused by him on content specified by research objectives of systematic description, prediction or explanation'
>
> (Cohen and Manion, 1989,p307)

The interviews were conducted 'face to face' to permit a full range of non-verbal behaviours to be observed by the researcher, and with the intention that a closer rapport would arise due to the environment. The interviews lasted for varying amounts of time depending on the extent to which the patient elaborated on the various areas of questioning. The shortest interview lasted 2 minutes 30 seconds, ranging to the longest which lasted 7 minutes.

The process of the interview was to ascertain the interviewee's views and thus maintain maximum quality as:

'Face to face interviews offer the possibility of modifying one's line of enquiry, following up interesting responses and investigating underlying motives...'

(Robson, 1993 p229)

Although it is acknowledged that interview information can be biased (Oakley, 1981) it was decided that this method was most relevant for this study. This is due to the fact that it allows a more in-depth exploration of the patients' opinions and their perceptions of the barium enema examination. The semi-structured approach was considered most appropriate as it allows greater scope for exploring the patients' feelings and thoughts, as it enables the use of probing if particular concerns are voiced.

Interview information was recorded on a predesigned schedule. This was a breakdown of the examination components; preparation, examination, aftercare, and extra notes. The researcher completed this after the interview in an effort not to inhibit the patients. Field notes were not taken as, although the researcher recognises that this would result in loss of data, it was not thought to be as significant as promoting anxiety in the patients and thus lowering response rates. The schedules were completed in a nearby office immediately after the interview in an attempt to minimise decay bias.

'Immediate recording is probably more valid and reliable'

(Polgar and Thomas, 1995 p141)

The decision was taken not to use audio tape due to the interviews being conducted in busy departments where there is a lot of background noise. Also the researcher felt that this may inhibit the subject or cause anxiety prior to their examination and therefore would be detrimental.

5.4 Interviews

Barium enema patients arrived in the X-ray department and were given changing instructions and a gown. Once they were ready for the examination they were asked to take a seat in the specified waiting area. At this stage the patients were approached by the researcher, given a brief explanation of the research and asked if they would participate. The interviews were undertaken confidentially, in the waiting area so that no disruption to the department would result due to a patient being interviewed and not immediately available for their examination. It was thus anticipated that interviews may be cut short, however in practice this did not happen.

5.5 Results

The data from the interviews produced information which helped the researcher understand the way in which patients' feel about the barium enema examination. Each main area of inquiry explored by the researcher is discussed below. (See appendix 3 for raw response data)

5.5.1 Preparation

In the area of preparation for the examination, patients' distinctly split the processes of changing their diet and taking the laxatives into completely separate things they had to do for the examination rather than seeing the two together being a process of preparing their body for the examination. The responses are reported separately to reflect this. Of those that mentioned the dietary information 46.67% (n=7) were negative about its content.

Responses shown can be identified firstly be the study number followed by the interviewee identification.

'The diet information was confusing' (1:2)
'I didn't know what I was allowed to eat' (1:3)
'The diet information was not enough' (1:5)
'The diet information wasn't enough' (1:7)
'I'm not sure what I was allowed to eat' (1:8)
'The diet was confusing' (1:11)
'I was confused by the diet sheet' (1:13)

The resultant effect of this was that some of the patients did not eat anything at all during the preparation period because they didn't want to eat something that they shouldn't have. Some patients' did call the relevant X-ray department and ask for further explanation.

Recounting the laxative part of the preparation gave rise to some very rich facial expressions, which showed to the researcher that the patients' had quite definitely experienced the ferocity of its action. All responses in this area 33.33% (n=5) were negative:

'The laxative was very strong' (1:1)
'The laxative was painful' (1:2)
'The laxative really took it out of me' (1:6)
'Laxative was fast acting, I'm a bit sore' (1:12)
'The laxative caused a lot of pain in my tummy' (1:14)

In referring to concerns relating to the action of the laxative 13.33% (n=2) patients' appeared to wonder when it's effects would cease:

'I'm worried as I'm still going to the toilet a lot' (1:10)
'I'm worried I will 'go' on the table' (1:12)

These statements show the patients' actively carrying the effects of the preparation with them and building up concerns about how they will 'perform' in the examination.

5.5.2 Explanation about the examination

The patients were asked if they knew anything about the examination that they were about to have. This line of questionning resulted in questions being returned to the researcher about specific points of the examination in 53.33% (n=8) of cases:

'What happens in the room' (1:1)
'Why did I have to get undressed' (1:2)
'Where will the tube go' (1:3)
'How far up will the tube go' (1:4)
'Aren't they just taking pictures of my tummy' (1:5)
'How much barium will I have to drink' (1:7)
'I'm worried about what will be expected of me in there' (1:13)
'What happens?' (1:15)

Other patients' (20%, n=3) made blunt statements, but did not make an effort to find out any further information from the researcher:

'I'm not sure what the examination is about' (1:8)
'I don't understand what's going to happen' (1:14)
'I don't want too much information, I don't like hospitals' (1:1)

Subject 1 can be seen to contradict themself as they ask the researcher what happens but also state that they don't want to know too much, adding in very poignantly that they don't like hospitals. This gives the impression that they have had a bad experience in hospital before and feel that although they would like to know what will be done, they need to shield themself from it.

Some patients'(20%, n=3) mentioned who or what they felt was the source of the information they had about the examination:

'I got the information from friends' (1:2)
'I got the information from books and friends' (1:4)
'A friend has had one and said it was horrible' (1:10)

Although the X-ray department sends an explanation about the examination on the appointment letter to each patient, only one of the patients interviewed acknowledged some form of information from the hospital. However, the response was not positive:

'The information sheet frightened me' (1:14)

This infers that information provided by the X-ray department does not meet the needs of the patients.

Some patients' (13.33%, n=2) did identify what they thought would be the way to inform people about an examination such as this:

' a leaflet would be good' (1:1)
'Information as a booklet would be good, easier to take in' (1:11)

5.5.3 Feelings about the examination

The patients had explained to the researcher about how they had been affected by the preparation for their barium enema, both physically by the laxative and emotionally in terms of the information about the examination. The researcher then encouraged them to explain how they felt about having the examination. 66.67% (n=10) of patients' made very open statements:

'I'm very anxious' (1:1)
'I feel anxious' (1:2)
'I'm anxious' (1:3)
'I'm very anxious' (1:4)
'I feel very anxious' (1:5)
'I'm anxious' (1:8)
'It has to be done, I'm not anxious' (1:9)
'I'm very anxious' (1:12)
'I'm very, very anxious' (1:13)
'I feel anxious' (1:15)

Some patients' (13.33%, n=2) specified the examination:

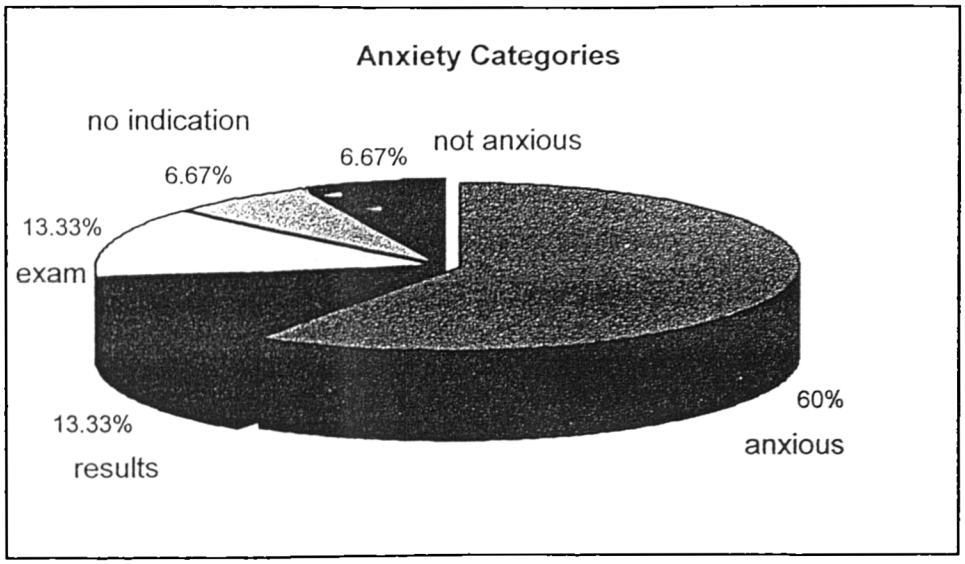
'I'm anxious about the examination' (1:10)
'I'm worried about what will be expected of me in the room' (1:13)

20% (n=3) of patients focus of their feelings were concerns about what would be demonstrated by the examination:

'I'm worried about the outcome' (1:6)
'I'm worried about the results' (1:7)
'I'm worried about the outcome' (1:14)

Patients' expressed their feelings about the examination in terms of anxiety. A general pattern of anxiety prior to the examination emerged. The pie chart below (Fig. 5.1) shows the categories expressed within the area of anxiety.

Figure 5.1



5.6 Following the examination

Once the examination was completed and the patients were ready to go home, they were approached by the researcher for follow-up. Interviews were undertaken in the waiting area, confidentially. Each patient was asked to explain how they felt at that stage about their barium enema examination.

66.67% (n=10) of replies had a positive view:

'It was ok' (1:1)
'It was fine, not painful' (1:3)
'If I'd known that was all, I wouldn't have worried' (1:4)
'It didn't hurt, better than I expected' (1:6)
'Not as bad as I thought it would be, ok' (1:7)
'Better than I thought, felt ok. I wish they had explained it like it is, it's fine' (1:8)
'It was ok, I had no accidents and it didn't hurt' (1:10)

'I wouldn't have got so worked up if I'd known, it was ok, it was uncomfortable but better than I expected' (1:11)

'I'm glad it's over but it was fine' (1:14)

'My tummy felt uncomfortable, but it wasn't bad. I wish I had known it would be like that' (1:15)

33.33% (n=5) of patients' did not have a very good experience:

'It was horrible, I want to go home' (1:2)

'It was very uncomfortable, I want to get out' (1:4)

'It was a horrible, painful experience' (1:5)

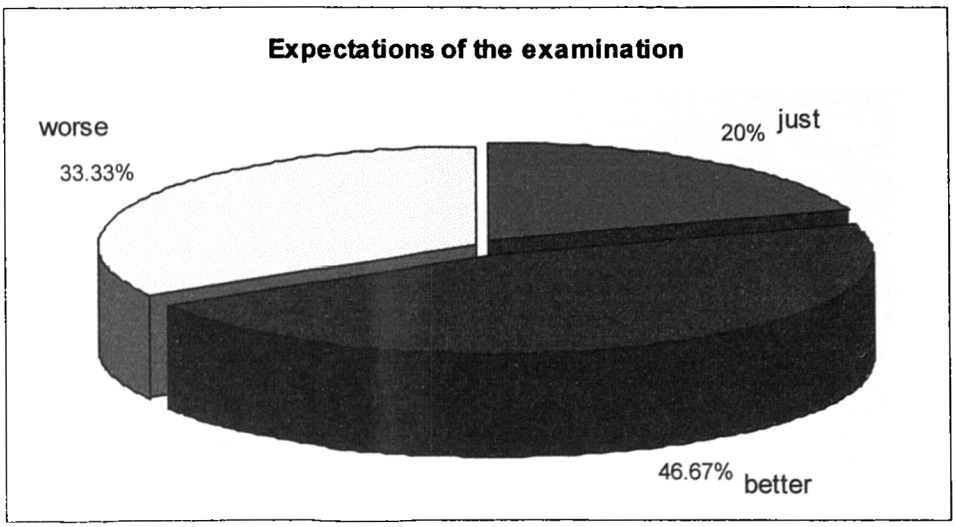
'It wasn't nice, I'm sorry I have to go' (1:9)

'I didn't like it, it felt awful' (1:12)

Subject 4 can be categorised in both of the positive and negative viewpoints of the examination, this begins to show how although something may be uncomfortable and a patient needs to get back into their own environment, they recognise that it wasn't as bad as they had expected and feel that they worried unnecessarily.

Figure 5.2 over the page shows how the barium enema examination met the subjects expectations (*Just* as they expected, *better* than they expected or *worse* than they expected).

Figure 5.2



5.6.1 Aftercare

The patients were finally asked if they had received the aftercare information. This concerns what they should do about eating and drinking now the examination is over. The responses were noted down as being either correct or incorrect. The responses received were fairly evenly split: 40% (n=6) had the correct aftercare. 53.33% (n=8) indicated that they did not receive any aftercare information or indicated incorrect information. One patient did not give a response to this area of questioning.

It is the policy of both of the hospitals involved in the study to give aftercare information verbally once the examination is finished. When questioned, staff were unanimous in their certainty of having given the information to all of the patients. This implies that verbal information may not be effective in this situation.

5.7 Discussion of Results

This study elicited productive conversations from the patients involved. Only the relevant components of the conversation have been reported. The patients' current understanding of their illness and various problems were excluded due to its irrelevance to the study.

The data collected has shown some patients experiencing difficulties at all stages of the barium enema examination. However two distinct areas have been highlighted in this study, these being anxiety and knowledge of the examination. From fifteen subjects eighty responses were recorded. 22.50% (n=18) of the responses were expressions of feelings of anxiety. 25.00% (n=20) of the responses were concerned with subjects feeling that they had insufficient information regarding the examination or that they had got their information from a non-medical source. The results are supported by earlier work carried out by the researcher which reported:

> 'All patients believed themselves to be suffering from anxiety, mainly due to lack of knowledge of the procedure, other sources of anxiety were expectations of the results and fear of pain'
>
> (Le Masurier, 1994)

The data has been presented in a qualitative form as it is the intention to keep the patients' feelings and comments prominent for their use in guiding the research.

This study however, is limited as it took place within the X-ray department and comment cannot therefore be made as to the extent to which a barium enema examination affects patients' once they have left the hospital. Chapter 6 will present a subsequent study designed to address this limitation.

6. Second Study

A series of focussed interviews with people who had experienced a barium enema took place during May to July 1995. Twenty five subjects agreed to participate after responding to either a poster campaign or magazine article.

6.1 Aim of the study

The aims of these interviews were:

(a) To establish whether the patients had information pertaining to the barium enema before they had the examination.

(b) To establish what the patients felt about the examination

(c) To establish whether they had any aftercare information

(d) To establish whether they had any physical after effects directly attributable to the barium enema

(e) To establish whether they had any psychological after effects directly attributable to the barium enema

This study targeted patients who had already experienced a barium enema examination. This sample were actively recruited via a poster campaign (See Appendix 4 for poster) and a request in a national magazine chosen for its specific health related appeal:

'Dear Heart to Heart

BARIUM ENEMAS

I am a PhD student doing research about Barium Enemas. I have heard about some traumatic experiences and would like to hear from any Top santé readers who have had a Barium Enema and would be willing to talk about it.

Thankyou'

The posters were distributed around; the University of Wales Bangor - Wrexham campus, two District general hospitals, and fifteen Doctors surgeries in Clwyd.

The sample for this part of the research was thus subject to some inherent bias due to the process of self selection for participation. This was unavoidable due to primarily ethical considerations. Patient data are confidential and therefore a random selection of those patients having had a barium enema could not have been identified and then contacted. Also, an effort was made to reach as wide a population as possible through a national magazine, as well as focusing on the researchers locality, to assess the extent of opinion on the subject. Convenience sampling is not considered a good sampling method due to the inability of the researcher to control for biases. However, they are recognised as being inexpensive, easy and quick to carry out, and although are discredited in terms of confirmatory work are deemed acceptable for exploratory studies (Burns and Grove, 1993 p245). It is stated that:

'Used with reasonable knowledge and care, it (convenience sampling) is probably not as bad as it has been said to be'

(Kerlinger, 1986 in Burns and Grove,1993)

6.2 Subjects

Poster Campaign and Magazine Article (n=25)

(a) Poster Campaign (n=10)

(b) Magazine Article (n=15)

6.3 Procedures

Focused interviews were considered the best method of data collection for this investigation. This gave the researcher the opportunity to obtain certain specific data whilst allowing the patients subjective experiences of having a Barium Enema to emerge.

> 'An approach which allows people's views and feelings to emerge, but which gives the interviewer some control, is known as the focused interview'
>
> (Merton et al, 1956)

The first preliminary investigation was used as a situational analysis as it uncovered; the aspects of the Barium Enema which were important to the patients, the meaning of these, and the effect that they had on the patients. From the data collected, an interview guide was developed which covered the specific areas of questioning for this study. (See Appendix 5)

Telephone interviews were also considered appropriate at this stage in the research. This method, like the above mentioned interviews are synonymous with a high response rate.

> 'The refusal rate once a person has been contacted is usually very low...The cost ...is far less than direct interviews'
>
> (Brodie,Williams,Owens, 1994 p120)

There is also the advantage of speed in telephone interviewing, which is one of the main reasons it is used for opinion polls and by media research agencies. Some of the agencies also operate a 'mixed-method model' (Oppenheim, 1992), therefore with adaptation of the interview guide, it was thought to be a valid form of data collection at this stage. However, the face to face interview was the preferred method, and it was decided that telephone interviews would be used only if it was impossible to conduct face to face interviews.

A minority of patients responding to the poster campaign (20%, n=2) and all of those responding to the magazine article (100% n=15), were unable to be interviewed at their home. This was due either because of unwillingness to receive the researcher in their home, unwillingness to be identified, because of inconvenience to them or distance. These patients were interviewed over the telephone after a preliminary call when a convenient time was booked. The adapted interview guide was followed and probes used to enable the researcher to discover the patients' subjective experiences. There were no refusals to the request for a telephone interview. It is hypothesised at this stage that this may be due to the nature of the subject which could be deemed rather intimate as:

> 'Some people find the disclosure of sensitive information to be easier by telephone. The 'face to face' interview may be too confronting or embarrassing for them'.
>
> (Polgar and Thomas, 1992)

6.4 Interviews

The subjects were given a brief explanation of the research and asked if they were willing to participate. The researcher requested permission from all interviewees (n=8) to record the interview on audio tape. This was in an effort not to lose any valuable data which could be used to enhance the research by unearthing new pathways to be

followed. Also it was the intention to encapsulate the attitudinal and emotional expressions of the interviewees for scrutiny later. Unfortunately this could not be used in the first preliminary investigation owing to the fact that the patients were interviewed informally in the waiting area of the x-ray departments, thus it was not feasible.

Approximately half (62.5% n=5) of the interviewees agreed willingly. However, it was noted by the researcher that when the interview was complete and the tape recorder switched off, the interviewees without prompting began recounting stories. They began to freely explain their emotional feelings about their Barium Enema experiences which they were reluctant to divulge on tape. These were noted on the interview guide used as soon as possible after leaving the interviewee. Detailed notes were taken following the interview schedule for those who were unwilling to be recorded:

> '...the use of such technology (audiotape) may be seen as inappropriate if it is likely to affect the results excessively'
>
> (Brodie,Williams,Owens, 1994 p93)

The majority of people replying to the magazine article (86.67% n=13) wrote letters explaining their experiences. Most of these covered all of the points laid out in the interview guide therefore negating the need for further contact, apart from the customary acknowledgement letter of gratitude for participation. A proportion (13.33% n=2) however, simply sent name and address and note of willingness to answer any questions to aid the researcher in her work. These people were sent letters of acknowledgement and a set of questions adapted from the interview guide. All replies from this covered all necessary areas and were thus deemed satisfactory. The responses from this stage were subjected to content analysis and entered onto a relational database.

6.5 Results

The data from this study gave a more holistic picture of how patients' felt about the barium enema examination due to them being removed from the experience for a minimum of ten weeks. Thus they had had time to assimilate and reflect the whole experience. Each main area addressed by the subjects is discussed below before being depicted in table form. (See appendix 6 for raw response data)

6.5.1 Preparation

In the area of preparation for the barium enema examination, patients' generally seemed to pass over this area, unless it had significant impact on them. There are 12% (n=3) of responses from the total sample in this area, however, the extent of feeling and attention to detail in their accounts are considerable.

Subject 4 is actually in the process of taking the Health Authority under which she had her barium enema to court as she nearly died after taking the laxative preparation. Re-counting her story she stated:

> 'Ten minutes after taking the laxative I collapsed on the bathroom floor and was unable to raise myself from the ground through dizziness and weakness. After about half an hour uncontrollable diarrhoea started which continued until midnight, during this time I drifted in and out of semi-consciousness and was unable to move...' (2:4)

For five months after the barium enema this lady had repeated attacks of diarrhoea, and episodes of dizziness when she has been forced to sit down even whilst in the street. As a consequence of the whole experience which began in August 1992 she developed and is still suffering from Post Traumatic Stress Disorder (PTSD).

Subject 17 found the laxative preparation so effective and long lasting that she had difficulty in getting to the x-ray department for her appointment, and was still visiting

the lavatory in the x-ray department immediately before her examination, such was the extent of her problem that she thought it would be impossible for the barium enema to be carried out. However, she says:

'Somehow or other I managed to get through it'. (2:17)

Subject 23 simply states

'I didn't like the laxative though' (2:23)

Those that mentioned the dietary information had mixed views about it's content:

'I was confused about the dietary instruction' (2:1)
'I had good prep information' (2:5)
'The prep information was clear' (2:6)
'The prep instructions were not clear'(2:20)

Although the responses in this section are few, it appears that the preparation for the examination does have quite an impact on some patients.

6.5.2 Explanation about the examination

The patients were asked if they had known what to expect when they went in for their examination, examples of the responses are shown below.

'The information was not very clear' (2:1)
'The information wasn't clear' (2:2)
'I had hardly any information' (2:3)
'I was told I was having a barium enema that's all' (2:4)
'Not much examination info but, the examination was explained in the room before it happened' (2:5)
'I wasn't told what the exam involved' (2:6)

'I didn't know what was involved' (2:7)

'I didn't understand what it involved' (2:8)

'I knew what it was going to be like from my friend' (2:10)

'I didn't have information apart from the nurse (radiographer in the room)' (2:11)

'I've had two so I knew what to expect' (2:13)

'I have a medical background so know information' (2:22)

These statements show the range of knowledge of the procedure that patients' expressed. They broadly indicate a lack of information pertaining to the procedure and what is involved, or patients finding out relevant information for themselves.

6.5.3 Feelings about the examination

The patients' were asked to explain how they had felt about having the examination

'I was concerned about what was the matter' (2:2)

'I was very frightened' (2:4)

'I was anxious about what was going to be done' (2:6)

'I was worried about how long I'd be in there' (2:7)

'I was frightened I had cancer' (2:8)

'I wasn't worried' (2:9)

'I was worried about the outcome' (2:12)

'I wasn't worried about having it done, I am a retired GP so I knew what would happen' (2:16)

This sample of answers show the varied foci of concerns of this group of patients before they had their barium enema. Their recollections of the examination itself have brought up a new area of impact on a patients' conceptualisation of the barium enema.

'The staff were brusque' (2:3)

'No-one thought about me, I was like a piece of meat' (2:4)

'The staff were good in the room' (2:6)

'They were very nice to me when it was happening' (2:7)

'The staff were really caring' (2:9)

'I felt like I wasn't a person' (2:10)

'I was treated very well, Dr gave me a good service' (2:16)

The area of how the patient felt they were treated in the X-ray room was not highlighted in the first study, however it appears to be something that they remember once the examination experience has passed.

6.5.4 After the examination

The patients were asked if they had experienced any after effects either physical or psychological from the barium enema.

'I had windy stomach pains after' (2:2)

'I have been diagnosed as suffering from PTSD' (2:4)

'I had a headache and was constipated after' (2:7)

'I had to call the GP out as my stomach was so painful' (2:12)

Subject 17 had a rather traumatic time afterwards, and although she reports being perfectly healthy now, she was quite stressed for a while. She explained:

'I thought everything would be all right afterwards, however I didn't stop going all day and night.... I finally got to bed at midnight, but I had to get up in the night as well.... I was due in to work at 7am, I do cleaning with my husband, and I thought to myself pull yourself together and just get off to work, which I did. Thank goodness my husband was with me as I came over all hot and dizzy and collapsed and I'm ashamed to say messed myself up again, I came around very quickly and my husband took me home to bed. Luckily I had a pre-arranged Doctors appointment that afternoon, so my husband took me down... now you're going to laugh at this now, my baby granddaughter was around at our house and so I put one of her nappies on to go down to the GP as I still couldn't trust myself, it's funny now, but it wasn't at the time. Anyway the doctor sorted me out and I've been fine since, but I wouldn't fancy another one'. (2:17)

6.6 Data Coding

The responses from this study took the form of transcriptions from audio tape and the interview guide. A large amount of data were produced and to demonstrate it fully it has been subjected to preliminary analysis for coding. Each phrase was broken down into segments taking care not to lose the context of the phrase. The content of the responses were analysed and entered into the database Microsoft Access for classification and grouping. Once all of the data had been entered, they were analysed for categories and breakdowns and subsequently recoded. The data were sorted into broad band categories for ease of expression. Each category has several subgroups. Six categories were developed (See table 6.1 below)

TABLE 6.1 BROAD BAND CATEGORIES

CATEGORY	DESCRIPTION
1	ANXIETY
2	INFORMATION
3	PROBLEMS
4	STAFF
5	EXPECTATIONS
6	BARIUM ENEMA

The full coding sub categories are shown in table 6.2 over the page

TABLE 6.2 EXPANDED CATEGORISATION

CODE	DESCRIPTION
1.1	ANXIOUS-EXPRESSING CONCERN-
1.2	NOT ANXIOUS
1.3	ANXIOUS ABOUT OUTCOME
1.4	WORRIED UNNECESSARILY
1.5	FEAR OF CANCER
2.1	INFORMATION ENOUGH/GOOD
2.2	INFORMATION NOT ENOUGH/NONE/FROM
2.3	DIET INSTRUCTIONS GOOD
2.4	DIET INSTRUCTIONS INSUFFICIENT
3.1	AFTERCARE -GIVEN /CORRECT
3.2	AFTERCARE -NOT GIVEN/INCORRECT
3.3	LAXATIVE PROBLEMS
3.4	PHYSICAL PROBLEMS AFTER
3.5	PSYCHOLOGICAL PROBLEMS AFTER
3.6	NO PHYSICAL PROBLEMS AFTER
3.7	NO PSYCHOLOGICAL PROBLEMS AFTER
4.1	STAFF GOOD/EXPLAIN/KIND/HELPFUL
4.2	STAFF NOT GOOD/NO EXPLANATIONS
4.3	STAFF CHECKED PT BEFORE THEY LEFT
4.4	PT NOT CHECKED BEFORE THEY LEFT
5.1	JUST AS EXPECTED
5.2	BETTER THAN EXPECTED
5.3	WORSE THAN EXPECTED-HORRIBLE EXPERIENCES
6.1	WOULD HAVE ANOTHER BARIUM ENEMA
6.2	WOULD NEVER HAVE ANOTHER BARIUM ENEMA
7.1	LIKED LEAFLET +VE COMMENTS
7.2	DISLIKED LEAFLET -VE COMMENTS
7.3	LEAFLET DECREASED ANXIETY
7.4	LEAFLET INCREASED ANXIETY

From 25 respondents 225 responses were recorded and 24 categories generated. The breakdown of responses are shown in table 6.3 over the page.

TABLE 6.3 RESPONSE CATEGORIES FOR STUDY 2

CODE	DESCRIPTION	No	%
1.1	ANXIOUS-EXPRESSING CONCERN-	8	3.56
1.2	NOT ANXIOUS	7	3.11
1.3	ANXIOUS ABOUT OUTCOME	7	3.11
1.4	WORRIED UNNECESSARILY	1	0.44
1.5	FEAR OF CANCER	5	2.22
2.1	INFORMATION ENOUGH/GOOD	8	3.56
2.2	INFORMATION NOT ENOUGH/NONE/FROM	28	12.44
2.3	DIET INSTRUCTIONS GOOD	2	0.89
2.4	DIET INSTRUCTIONS INSUFFICIENT	2	0.89
3.1	AFTERCARE -GIVEN /CORRECT	10	4.44
3.2	AFTERCARE -NOT GIVEN/INCORRECT	9	4.00
3.3	LAXATIVE PROBLEMS	4	1.78
3.4	PHYSICAL PROBLEMS AFTER	26	11.56
3.5	PSYCHOLOGICAL PROBLEMS AFTER	3	1.33
3.6	NO PHYSICAL PROBLEMS AFTER	5	2.22
4.1	STAFF GOOD/EXPLAIN/KIND/HELPFUL	21	9.33
4.2	STAFF NOT GOOD/NO EXPLANATIONS	21	9.33
4.3	STAFF CHECKED PT BEFORE THEY LEFT	7	3.11
4.4	PT NOT CHECKED BEFORE THEY LEFT	12	5.33
5.1	JUST AS EXPECTED	1	0.44
5.2	BETTER THAN EXPECTED	11	4.89
5.3	WORSE THAN EXPECTED-HORRIBLE	8	3.56
6.1	WOULD HAVE ANOTHER BARIUM ENEMA	15	6.67
6.2	WOULD NEVER HAVE ANOTHER BARIUM ENEMA	4	1.78

TABLE 6.4 CATEGORY PERCENTAGE TOTALS FOR STUDY 2

CATEGORY	DESCRIPTION	% TOTAL
1	ANXIETY	12.44
2	INFORMATION	17.78
3	PROBLEMS	25.33
4	STAFF	27.10
5	EXPECTATIONS	8.89
6	BARIUM ENEMA	8.45

Category 1

12.44% of the total responses related to anxiety. 3.11% (n=7) of responses indicated that the patients were not anxious before their barium enema. 3.56% (n=8) of responses were general statements of anxiety and 3.11% (n=7) stated that they were specifically anxious about the outcome of the examination. 2.22% (n=5) stated that they were specifically anxious about being told that they had cancer. One response (0.44%) indicated that the patient felt that they had worried unnecessarily. Although the

percentages are low it can be seen that only seven out of the twenty five respondents indicated that they had not been anxious about the examination. The other data indicates that there are specific areas that cause anxiety in patients.

Category 2

17.78% of the total responses related to information. 70% (n=28) of the responses in this category (12.44% of the total) were expressions of the information not being enough, the patient having no information or the information being from a non-medical source. 3.56% (n=8) of the total responses indicated that the information was sufficient for them. 1.78% (n=4) of the responses related to the dietary information given as part of the patient preparation for the procedure. The responses were evenly distributed between positive and negative comments in this area. This data shows some comparison to the previous study which also reported a greater amount of subjects unhappy with the information they had.

Category 3

25.33% of the total responses related to problems. 1.78% (n=4) of responses relate to problems encounted with the laxative preparation. The remaining problems are associated with the period after the examination. 4.44% (n=10) of responses indicated correct aftercare and 4.00% (n=9) of responses indicated incorrect aftercare. Although the percentages are low, there is the indication that aftercare information was not significant for a number of patients in this study. 11.56% (n=26) of responses related to physical problems experienced by the patients' after they had left the X-ray department. 2.22% (n=5) of responses were statements indicating that no physical effects were experienced after the barium enema. 1.33% (n=3) indicated psychological problems.

Category 4

27.10% of responses related to staff. 9.33% (n=21) of responses related to patients' feeling that they were well treated by staff in the X-ray department. An equal number of responses indicated the opposite. 3.11% (n=7) of the responses indicated that patients'

were checked by staff before leaving the X-ray department. 5.33% (n=12) of responses indicated that the patients' were not checked before leaving the department.

Category 5

8.89% of responses related to patients' expectations of the examination. 0.44% (n=1) indicated that the examination was as it was expected to be. 4.89% (n=11) indicated that the examination was better than expected. 3.56% (n=8) indicated that the examination was worse than expected. Indicating that the barium enema does not meet the expectations of the patient.

Category 6

8.45% of responses related to whether patients' would have another barium enema if it was necessary. 6.67% (n=15) of responses were positive, with 1.78% (n=4) being negative.

6.7 Discussion of Results

The data from this study is recognised as being biased due to the process of self selection for participation. This study has however, addressed the limitation outlined in the previous chapter concerning the extent of effect of a barium enema on a patient once they have left the X-ray department. The aims have been met and the data collected shows correlation with that of the first study. The effects of time decay must be born in mind when reflecting on this data, consequently, the value of this sample must be recognised in that it gives a perspective of the lasting impression given by the x-ray department.

Both this and the first study have raised concerns about the patients' understanding or lack of knowledge of the barium enema examination. The next chapter will address the area of information in an attempt to provide possible solutions to this issue.

7. Information Tools

The qualitative research studies carried out have given a holistic view of the barium enema from a patients' perspective. The data has provided descriptions of experiences and indicated personal significance of the examination. The data obtained has highlighted areas within the examination which will now be addressed in a quantitative way. The qualitative work therefore, can be seen as a tool to unfold a research framework in an effort to improve the quality of the overall research.

The area of informing patients and the various forms of information have been discussed in the literature. The research outlined in Chapters 5 and 6 have shown barium enema patients to be lacking information concerning the procedure. This lack of information has been recorded at a fundamental level with comments such as:

'I didn't know I'd have to take all my clothes off - what are you going to do to me ?' (1:2)

Being informed is a core part of a patients right. As healthcare professionals radiographers have a legal as well as a moral obligation to fulfil this basic patient need. The research carried out to date has highlighted that this area is not being addressed in a format that facilitates patient understanding in the area of the barium enema examination. This research will now address this issue in an effort to make an impact specifically on the anxiety experienced by barium enema patients, and more generally on the whole barium enema experience. Various forms of disseminating information to the general public have been examined. Two forms of information have been identified to be used in this research. One being a standard written form. The other being an innovative area which will push the boundaries of information for patients and address the issue of information giving from a developing technology perspective.

7.1 Aim

To design and compile information about the barium enema examination that is easily understood, widely acceptable and accessible, easily distributable and inexpensive to produce.

(Part a) To design and compile an information leaflet for the barium enema patient that will inform on all aspects of the procedure.

(Part b) To design and compile a computer based educational programme to inform on all aspects of the barium enema examination

7.2 (Part a) Information Leaflet

This research uses the data gathered from the literature and previous qualitative work to compile an information leaflet. This will address the barium enema examination in a way that will inform the patient from both a procedural and sensation perspective. The information to be included in the leaflet was felt to be the most important part of this exercise. The content was thus the initial starting point of this part of the study.

Barium enema information sheets were collected from five hospitals in the North Wales area. The content of these were subject to close scrutiny. The description of the barium enema took varying degrees of depth from two lines to half a page of A4. Most of the information took the form of a description of the preparation necessary, and gave most detail of when the laxative must be taken. Two of the sheets gave aftercare information, the others simply stated what happened in the room. Only one sheet gave any indication of sensations the patient may feel during the examination. All of the information about the barium enema were on sheets of A4 with the patients appointment details.

In an effort to address issues of presentation, hospital leaflets were obtained from waiting areas in various hospitals in North Wales and Ohio USA. Hospitals in North Wales were used for convenience, those in Ohio were targeted to provide a comparison and give a fresh perspective.

It was decided that the information would have most impact in the form of a leaflet which would be distinct from the appointment details and would therefore focus the patient. Illustrations were felt to be important to enhance the appearance of the booklet and make the information more acceptable at first glance. Although, it was felt to be important to give explicit factual and sensory information, it was also felt important to keep the information short and simple.

To enable the leaflet to be produced professionally, minor sponsorship was sort. Norgine, makers of Klean-Prep (a laxative), sponsored this part of the study by giving advice from their design department, help with graphics and printing the leaflets.

7.2.1 Leaflet content

The leaflet was designed to explain what a barium enema is, what a patient has to do, and what a patient can expect to happen to them. It is stressed in the introduction to the leaflet that it is not intended to be comprehensive, and that specific questions can be posed to the radiographer or radiologist. It was constructed as a small pocket booklet using simple language and illustrations to guide the patient through the barium enema examination from beginning to end in an easy to follow manner. It also gave a page where the patients were encouraged to note down any questions they wished to ask.

The areas covered by simple explanations were; what a barium enema is, the preparation procedure, what happens when the patient arrives in the X-ray department on the day of the examination, the barium enema examination, and aftercare information. The format

in which the information was presented was in an effort to be eye catching so that if the patient wanted information about the examination it was easy for them to locate.
The Leaflet can be seen in Appendix 7

7.2.2 Timing

The leaflet was designed to be sent out to patients with their appointment letters. This was in an effort to allay any anxiety caused by a fear of the unknown, and address patients' lack of knowledge that was highlighted in the two previous chapters.

The effect of the information leaflet on patients' anxiety will be tested via a questionnaire. This will be described in Chapter 8

7.3 (Part b) Computer Programme

This area of informing patients is looking towards the future ways and methods that will be available and acceptable to inform people about examination procedures. The last five years have seen great advances with new computer technology, however there are few fully operational computer based multimedia systems. This programme has been designed to take patients through all aspects of the examination in an informative and entertaining way. Due to the innovative nature of this work, it needs testing to evaluate its usability and content before it can be given actual barium enema patients and its effect on their anxiety tested. The development of this programme and its testing with potential patients will be described.

7.3.1 Equipment

The program was developed on an IBM compatible Pentium 100 using Toolbook V3.0 and Visual Basic. The prototype will run on any IBM compatible multimedia system which supports these languages as long as the hardware provides at least DX 2 486 75mhz main chip, 16M bytes RAM, 400M bytes hard disk (size of the uncompressed associated files), sound card and SVGA monitor. It is possible to run the prototype over a network of sufficient bandwidth (determined by the digital video). The prototype will run under a Microsoft Windows 3.1 (or later) environment.

7.3.2 The Barium enema Storyboard

A storyboard developed from the existing prototype for the Barium Swallow examination was written to cover the 'holistic' barium enema examination. This therefore, started from the appointment system and included information on all aspects of the examination, concluding with information as to when the results of the examination would be ready and how they were obtainable.

The first draft storyboard was compiled and distributed to practising radiographers, radiography lecturers, imaging managers and a medical sociologist for comments and criticism. Minor amendments were made before the storyboard was ready for programming. The programming was completed by three students as part of their industrial project for their HND in Software.

7.3.3 Subjects

Part 5- Computer Design 'Barium edutainment'(n=32)

(a) General public (n=20)

(b) Healthcare staff (n=12)

7.3.4 Sampling

A sample of 20 members of the general public and 12 healthcare staff used the prototype during the refinement stage. The volunteers offered constructive criticism about the content, usability and how the media were represented. The suggestions were used to inform the design process in an iterative fashion. This cyclic approach took 25 days.

7.3.5 Pilot Study

Pilot work for this research was undertaken at Salford University with a Barium Swallow prototype program. Storyboards of the Barium swallow examination were written and members of the general public were consulted on their content. The storyboards were translated into a computer based prototype, they showed limited lateral functionality but several well defined areas of vertical functionality (i.e. it teaches a lot of specific information but not a lot of generic / transferable skills). This work was completed by two undergraduate programmers, one student radiographer and one radiography lecturer.

7.3.6 Data Collection

Qualitative and quantitative data were collected from 32 potential barium enema patients in Wrexham. The term potential patient has been used as the subjects were not actually Barium enema patients. However, an effort was made to use members of the public who are representative of the barium enema patient population hence 47% of the participants were over 50 years of age. Knowledge gain from the computer program was tested using a combination of true/false and multiple choice type questions before and after using the information system 'Barium enema edutainment'. The respondents were also asked to rate the information content and how 'user friendly' they felt the program was, using a five point Likert type scale. The usability of the computer program was

tested by the Software Usability Measurement Inventory (SUMI). (See Appendix 8 for questionnaires)

7.3.7 Scaling Measures

Judgement of an intuitive and subjective nature is always involved in attitude measurement whether from an individuals or an observers point of view. This means that measures of this type are immediately vulnerable to suspicion on grounds of validity (Polgar and Thomas, 1995 p162). Due to these inherent problems attitude measurements are devised in the form of scales and therefore use multiple phrases pertinent to the attitude under scrutiny, which are given scores that are combined and thus do not rely on a single judgement. A summary of the scaling measure used in this part of the study is given below.

7.3.8 Likert Scales

These are summated rating scales in the form that was developed by Likert (1932), that are used in attitude measurement to assess someone's depth of feeling on a particular subject that it would be unable to assess by use of a single question. They contain a statement with a scale afterwards for the respondent to mark. The original version of a Likert scale consisted of five categories with the most negative response having the value of 1 and the most positive response the value of 5. The scales are most commonly used for determining agreement, evaluation or frequency (Burns and Grove, 1993). Only monotone items, that is those that are definitely agreeable or disagreeable, are used in this type of scale. Therefore a respondent should indicate a degree of agreement or disagreement with a particular statement. A four point Likert type scale would give the responses (1) strongly disagree (2) disagree (3) agree (4) strongly agree. A five point scale would give the respondent the extra choice of a neutral response. A score is determined by; the numerical coding, the response options, and adding the agree and

disagree responses for each statement. Interpretation is that a respondent who is highly in agreement will gain a high score as they will always choose the agree type responses. A respondent who is neutral will have a middle of the range score as they will choose some agree type and some disagree type responses. Finally, a respondent who is highly in disagreement will gain a low score as they will always choose the disagree type responses. Researchers now fit the scales to their needs, thus scales can be found in lengths as long as seven response options to as little as four. Some scales miss out the uncertain response option to force people not to adopt the acquiescent response mode. It must be noted that reliability of the scale is influenced by the length of the scale, less than five to seven categories limits reliability, but it is not increased by using more categories than this (Masters, 1974). A Likert type scale has the advantage that it is relatively simple to construct and can be used in a variety of areas as peoples attitudes are often very complex. This type of scale can also be more acceptable to respondents as they can indicate their tendencies rather than be forced into a yes or no choice of response. This consequently leads to the response information being more precise to the respondents opinion and therefore more reliable data (Judd, Smith and Kidder, 1991).

7.3.9 The Software Usability Measurement Inventory

The SUMI consists of 50, 3 point Likert type scale questions. This questionnaire was completed by all respondents after using the computer program. The data collated from this questionnaire were analysed using the analysis tool provided. All of the potential patients were shown an information leaflet after the computer program and asked to critically compare the two information system methods.

7.3.10 Results

The 'Barium Edutainment' program was tested for knowledge gain using a combination of true/false and multiple choice type questions about the examination procedure both before and after using the program. Demographic details were solicited, and five point Likert type scale questions relating to the computer program and its 'user friendliness' were asked after completion of the tests. 32 potential patients participated in the exercise. Before completing the program scores in the test ranged from 1 to 12 with 15 being the maximum score possible. After completion 13 of the participants scored the maximum 15 with the lowest score recorded being 12. An attempt was made to make the 'potential patients' as realistic in age to barium enema patients as possible. However, this proved difficult in terms of firstly, gaining participation from hospital wards in the Maelor hospital Wrexham, and then finding sufficient patients who (a) were well enough and (b) had not already experienced a barium enema. Consequently 15 of the participants were 50 years or over and 17 were 30 to 49 years old.

The usability of the computer program was tested by the Software Usability Measurement Inventory (SUMI). A global scale and five subscales pertaining to usability namely; efficiency, affect, helpfulness, control, and learnability were demonstrated. These SUMI scales are calibrated such that a score of 50 is the standard for state of the art commercial software. Above 50 is ahead of the art for quality of use. The median scores for the scales are shown below.

TABLE 7.1 SUMI SCORES FOR COMMERCIAL SOFTWARE

Scale	Global	Efficiency	Affect	Helpfulness	Control	Learnability
Median	**65**	**62**	**62**	**66**	**58**	**62**

It can thus be seen that 'barium edutainment' scored above state of the art in all categories. The data analysis suggested that the participants found the program 'easy to use' and 'learnt a lot' from it. (See Appendix 9 for data and SUMI graphs)

7.3.11 Discussion Of Results

The prototype can be seen to have been successful in terms of 'potential' patients, and the usability of the program. The knowledge gain data compares with Consoli et al (1995) who used a computer assisted education program on cardiovascular risk for hypertensive patients and found that mean cardiovascular knowledge was more improved than with standard education tools. It remains to be seen when the money and technology will follow that something of this sort can be set up in public places for general use. Once this step has been taken there will be a need for further research into its successfulness. Whilst we wait for the resources there is the potential for refining and testing on 'real' patients.

7.3.12 Summary

This section has outlined and discussed the potential reality of patient education via computer assisted learning packages. Potential patients were questioned as to their knowledge gain and the usability of the computer programme, in order to establish its potential as a future tool.

7.3.13 Chapter Summary

This chapter has addressed the area of information about the barium enema examination for patients. Two distinctly different forms of information giving have been developed. The information leaflet will be tested on actual barium enema patients however, the computer programme needs testing as a package before its effects on the patient can be tested.

The following chapter will set out the study designed to test the information leaflet.

8. Third study

Patients attending for barium enema were invited to fill out a set of questionnaires. Five hundred and fourteen respondents are included in this study.

8.1 Aim of the Study

The aims of this questionnaire study were:

(a) To establish whether patients consider they have sufficient information prior to the barium enema examination

(b) To establish whether patients attending for barium enema examinations are anxious

(c) To establish whether knowledge of the barium enema results in a less anxious patient

(d) To establish whether patients recall aftercare information

For this research a more statistically representative sample was sought. This was addressed by analysing hospital statistics in the North Wales region. This was so that it would be acceptable to draw inferences and conclusions from the data that would be characteristic of barium enema patients, and ideally could be statistically proven to be not due to chance. Hospitals in the North Wales and Shropshire regions were contacted and approached, unfortunately after an initial uptake in five hospitals, two pulled out. The target sample size for this phase of the research was set at 1000 after consulting hospital statistics of barium enema examinations, and finally the 1000 questionnaires were distributed between three hospitals. The sample is again a convenience sample due

to the necessity to question barium enema patients in a set time period. It can however be said to be a random allocation to control and experimental group within the sample.

Specialist gastrointestinal hospitals were not used as it was felt that data on non specialist (i.e. district general) hospitals was a necessary first step and that specialist hospital patients have many more compounding variables which may affect their anxiety and knowledge about the examination. The area of specialism may be approached in further work if the study instrument is demonstrated to be worthy of intervention for this sample of barium enema patients.

The subjects were men and women aged from 18 to 80+ years of age in areas of North Wales and Shropshire. Information booklets were given to the appointments staff and they randomly sent out booklets to the barium enema patients with their appointment for the examination. At this stage the patients were not told that a study was ongoing. On arrival in the x-ray department on the day of their barium enema, each of the subjects were given an explanation of the study and were requested to fill in a questionnaire. Participants had no prior knowledge of the study or whether they had received the standard information or extra to the normal hospital information. The patients completed the first parts of the questionnaire whilst waiting to be called in for their barium enema and then finished the final part after the examination. They were asked to complete it in this way and then post it in the box provided in the waiting area before they left the department. Unfortunately some people did not feel that they could complete the final part of the questionnaire in the x-ray department and took it home with them. Some arrived in the post to the researchers address and others were un-returned. This accounts for some of the loss of data, and was expected if patients did leave the hospital with the questionnaires which was the reasoning behind trying to get the task completed in the x-ray department. For ethical issues see 4.4 and appendix 2

8.2 Subjects

Questionnaire Study (n=514)

(a) Hospital A (n=252)

(b) Hospital B (n=169)

(c) Hospital C (n=93)

8.3 Procedures

Self response questionnaires were chosen as the best method of data collection at this stage as they utilise standardised questions and are quick and easy to distribute which means that:

'They are very efficient in terms of researcher time and effort'

(Robson, 1994 p243)

Also, the patient has more time to think about their reply and is not in any way identifiable. Thus, they can be more truthful as they do not feel under any threat. It was thought that due to the invasive nature of the examination and thus the very personal content of the questions the promise of anonymity would be reassuring to the respondents, as Oppenheim (1992) states:

'Anonymity is especially important in surveys that involve 'sensitive' topics'.

(Oppenheim, 1992 p105)

The questionnaires can also be designed to allow direct comparison between respondents and also computer analysis. It is however recognised that the use of self response questionnaires may also lower the response rate due to issues of language and literacy.

To determine the difference from the norm in anxiety levels on the day of the examination, methods of measuring anxiety had to be considered. The two main methods are physiological indicators and self response questionnaires. Due to time, money and facility constraints physiological methods could not employed. It was also felt that in principle they were, in this instance, inferior to self report. The objective of this research was to ascertain whether the patient felt anxious, therefore the self response questionnaire would be the best method of ascertaining this information. The research is centred around the patient and whether their psychological needs are being met, rather than how something physically effects them. Thus, what they report is more important than physiological manifestations. Therefore, it was decided to use two self response forms of anxiety measurement, firstly a 100mm horizontal visual analogue scale (VAS) (8.4.2), and secondly Spielbergers state trait anxiety inventory (Spielberger et al, 1970). These two methods were incorporated into a self response questionnaire. (See Appendix 10 for questionnaire and Mind Garden certificate of permission for use of STAI)

8.4 The Questionnaires

A structured, formal approach was taken with the respondents completing the questionnaires individually with no interaction with the researcher. The wording of both the questions and most of the response alternatives were predetermined. All of the respondents therefore were guided to respond to the same questions, in the same order and had the identical set of options for their responses (Polit & Hungler, 1995 p274-275).

A conventional questionnaire design was adopted in an effort to be cheaper and less time consuming for the researcher. The majority of the questions were of the closed response format type to enable responses to be easily encoded and analysed. This was

also in an effort to keep time to complete the questionnaire to a minimum and stress to the patient as low as possible (Polgar and Thomas, 1992).

An information sheet accompanied the questionnaires identifying the researcher and explaining; the purpose of the study, the format the data collection was taking, the proposed benefit of the study, and that they were not obliged to take part if they did not wish to do so. Two questionnaires were devised and used alongside Spielbergers State Trait Anxiety Inventory (STAI). The first questionnaire and Spielbergers STAI were to be completed before, and the second questionnaire after the examination. The questionnaire was structured in this way to attain information concerning the patients anxiety levels prior to the examination and then to ascertain their immediate feelings about the barium enema and investigate aftercare information, once the examination was completed.

8.4.1 The Questions

The aim of the questioning was to firstly glean demographic information to keep people at their ease and gently follow into the main area of information and anxiety levels. The STAI was positioned in the middle, after the VAS questions so as to cause as little difficulty as possible. This is in line with current thought that:

> 'Questions of a sensitive nature or those that might be threatening, should appear last on the questionnaire'
>
> (Burns and Grove, 1993)

the reasoning behind this was that if the respondents were put off by the STAI or took a long time completing it this would not interfere with the rest of the questionnaire, as it was necessary to further question the patients after the barium enema. It was expected, due to the type and amount of questions, that the barium enema patients would be

unwilling to fill in the STAI and therefore data from the VAS would be the only quantitative data in this area.

8.4.2 Visual Analogue Scale

The VAS is a self report assessment tool which is used to measure subjective experiences. It is defined as:

> 'A scaling procedure used to measure a variety of clinical symptoms (e.g. pain, fatigue) by having subjects indicate on a straight line the intensity of the attribute being measured'.
>
> (Polit & Hungler, 1995 p656)

The VAS is a straight vertical or horizontal line which is usually 100mm in length. It has anchors at each end of the line which represent the extreme opposites of the sensation being measured. The subjects are required to place a mark on the line where they feel it best demonstrates the sensation they are feeling. The conventional VAS is a horizontal line with no gradation, however some studies have adopted vertical lines with and without gradations (Polit & Hungler, 1995 p279). It has been suggested that, although both types of scale are valid and reliable, the vertical orientation produces higher scores and is easier for subjects to use and is thus more sensitive (Gift, Plaut & Jacox, 1986: Scott & Huskisson, 1979b: Sriwatanakul, et al 1983) however sensitivity is reduced if gradations are used. The horizontal VAS however has been shown to result in a more uniform distribution of scores (Polit and Hungler, 1991 p310). The VAS has the advantage of being graphic rather than language orientated and thus should produce a more sensitive result than that from a Likert type scale where the answer is a forced choice. However, difficulty has been experienced by some subjects in transforming a sensation into a mark on a line (Gift, 1989). Difficulties have also been encountered with subjects not understanding how to use the scale. This problem has been overcome by providing written instructions at the top of the scale or by teaching the subjects.

(Guyatt et al, 1987: Lorig, 1984.) Gift,(1989) in a methodology article about measurement of subjective phenomena states that:

> 'When used properly, the VAS is a reliable, valid, and sensitive self report measure for studying subjective patient experiences. Incorporation of a teaching session at the beginning of a study at the top of the questionnaire is recommended'.
>
> (Gift, 1989)

For three questions in the first part of the questionnaire, respondents were asked to indicate by placing a cross on a horizontal line how anxious they felt and whether they felt they had sufficient information (a completed example was given as well as the written explanation). A 100mm long horizontal line with no gradations was used, where the left end indicated very relaxed for anxiety, or strongly agree for having sufficient information and the right end indicated very anxious for anxiety, or strongly disagree for having sufficient information. A conventional VAS was chosen due to the researcher not wishing to attract erroneously high responses. An explanation with an example of how to attempt the questions was given at the top of the page as it was not possible for the researcher to approach and explain the scale to each subject.

8.4.3 Questionnaire Prior To The Examination

Part one of the questionnaire (see appendix 10 for full questionnaire) asked questions on background demographic details pertaining to:

- age range, which was divided into five groups to include from 18 to over 80 years
- gender
- who sent them for the examination
- whether they had experienced the examination before
- which bowel preparation they had used
- what their waiting preferences were

- where they had obtained information about the examination from
- whether they felt they had sufficient information, and
- how they felt

All information was anonymous.

8.4.4 Spielbergers State Trait Anxiety Inventory

The first part of the questionnaire was followed by Spielbergers State Trait Anxiety Inventory (STAI). It was chosen for this study due to its' applicability and proven validity. The STAI Test Manual was first published in 1970 (Spielberger et al, 1970); since this time it has been used extensively, with more than 2000 published research reports using the test.

The test measures State and Trait anxiety separately using self report scales. Twenty statements are given in each section, in which the respondent has four answers to choose from. State anxiety is tested asking the respondents to answer the statements to indicate how they feel 'right now, at this moment'. Trait anxiety is tested asking respondents to indicate how they 'generally feel'.

The State anxiety scale has been designed to evaluate feelings of apprehension, tension, nervousness and worry. It has been found to be a sensitive indicator of changes in transitory anxiety and has been extensively used to assess state anxiety induced by stressful experimental procedures and by unavoidable real life stressors, (Spielberger, 1983). It is thus due mainly to this that the tool was chosen for this study. It was used to assess the effect that an impending Barium Enema has on the patients' state anxiety, and to see whether there is a difference in state anxiety between patients who have been given an extra information sheet and those that have the standard hospital information.

The Trait anxiety scale has been designed to test for anxiety problems. It has been used to assess clinical anxiety, for screening students and military recruits and to evaluate the immediate and long term outcome of psychotherapy, counselling, behaviour modification and drug treatment programs (Ibid, 1983). It has been found to be useful in detecting persons with high levels of neurotic anxiety and for identifying differing motivation or drive levels.

The STAI has been translated into over thirty languages. For use in this study, it has been translated by the Translation Unit at the University of Wales, Bangor into Welsh. This is a necessary requirement as there is English - Welsh bilingual policy in three of the hospitals that have been approached for participation in this study. It has not however been validated in Welsh therefore, the ethics committee for hospital two stated that it would be inappropriate for the Welsh translation to be used. Hospital three felt that it would be best to have the questionnaire in Welsh due to the strictness of their bilingual policy. The translation of the questionnaire has therefore been carried out to comply with hospital policy and any Welsh questionnaires that are completed will be discarded for reasons of validity.

8.4.5 Questionnaire After The Examination

Part two of the questionnaire (see appendix 10 for full questionnaire) asked questions about:

- the examination
- how the person felt about it
- whether they had received aftercare information
- whether they could remember the aftercare information

The person was then thanked for completing the questionnaire and asked to leave their name and address or telephone number if they were prepared to discuss their Barium enema further with the researcher. Alternatively they were given the opportunity to take the researchers name, address, telephone and fax number if they had any comments which they were prepared to give, but wished to remain anonymous. A section was also left at the bottom of the questionnaire for the person to leave comments if they wished.

8.4.6 Pilot Study

A pilot study had to be undertaken in order that any problems of ambiguity with either the information sheet or the questionnaire would be demonstrated, and so that any omissions could be rectified. The pilot questionnaires thus gave some initial data and an indication of the length of time required to complete the task. The pilot study was performed over a one week period in a District general hospital and included twenty patients attending for a barium enema who had no prior knowledge of the study. This was to assess the validity and acceptability of the questionnaires. Following this, a number of amendments were made to the wording and structure of the questionnaire and information given. From this it was also found that 20 minutes was a realistic average time to complete the task and not an unreasonable time for the patients to contribute as it would be split between the periods before and after their Barium Enema.

8.4.7 Alterations

8.4.7.1 Front Cover

It was decided that the covering sheet was satisfactory and thus would remain unchanged.

8.4.7.2 Information Sheet

It was thought necessary to make a number of changes to the information sheet for various reasons:

Firstly to omit the word 'examination' and replace it with 'x-ray' as it was felt that the patients knew that they were coming for an x-ray and that if they read Barium Enema examination it could be anxiety provoking.

Secondly the 'purpose of the survey' section was altered in an effort to be more personable and easy to understand.

Thirdly, the section entitled 'exoneration' in the pilot was changed to ' your rights in this survey' and the wording in this section was also slightly altered to make sure that there could be no ambiguity or misunderstanding.

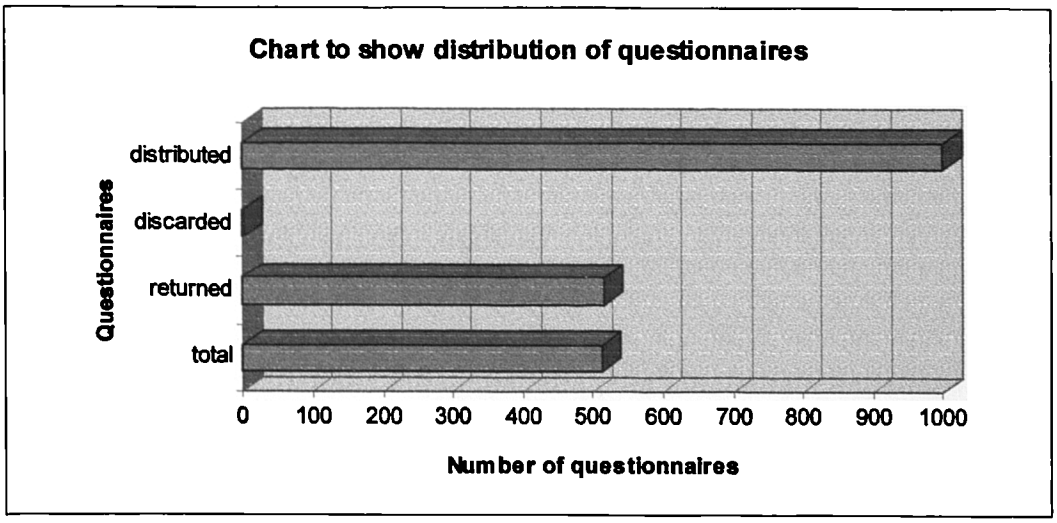
8.4.7.3 General Comments

The respondents reported that the questions were easy to understand and complete in parts 1 and 2 of the questionnaires. Some concern however was voiced over the STAI as some of the respondents found the format immediately off putting and had difficulty in answering the questions. Examination of the questionnaires later found that some of the STAI questions had been omitted by some of the respondents. Although this questionnaire caused some degree of difficulty, it was felt that if it was included after the part 1 of the questionnaire (to be completed before the barium enema) then it would not have a detrimental effect on the completion of the questionnaires. It was felt that it could only benefit the research by adding to the anxiety information about the patients.

8.5 Results

Of the 1000 questionnaires distributed 517 were returned (51.7%). Three were discarded as they were too incomplete to be of use, leaving 514 (51.4%) respondents in the study (See Figure 8.1). One of the incomplete questionnaires was Welsh, but all others completed were English. The original sample size for this stage was proposed to be 1000 patients. However owing to problems with the commencing of the study in one hospital (due to their own information leaflet being updated and difficulties in distribution to the patients due to staffing levels and co-operation and time constraints) only just over 50% were completed. Approximately 150 more questionnaires were distributed and not returned, reasons for this have not been fully determined, however in some cases it is known that patients left the hospital with the questionnaire instead of posting it in the box provided and therefore were probably forgotten or lost. Due to preliminary work with barium enema patients it is suspected that once the examination was over a proportion were no longer interested in taking part or felt too distressed to do so and consequently discarded the questionnaires.

Figure 8.1 Bar Chart to demonstrate questionnaire distribution information



Statistics from one of the participating hospitals gives a total of 863 patients having a barium enema in a one year period. Of these 495 (57.36%) were female and 368 (42.64%) were male. A table showing age ranges is given below:

TABLE 8.1 HOSPITAL STATISTIC AGE RANGE

age	no of respondents	percentage totals
18-29	23	2.67
30-39	48	5.56
40-59	199	23.06
60-79	402	46.58
80+	191	22.13

Five hundred and fourteen questionnaires and State Trait Anxiety Inventories were coded for computation and processed using SPSS for windows. The windows version of this statistical package allowed for easy transfer of data and graphs into the word-processing package being used.

8.6 Questionnaire Part One

Demographic Information

8.6.1 Age Range

The age range was divided into five bands 18 to 29 years n = 17 (3.3%); 30 to 39 years n = 19 (3.7%); 40 to 59 years n = 168 (32.7%); 60 to 79 years n = 272 (52.9%); and over 80 years n = 38 (7.4%).

TABLE 8.2 AGE RANGE FOR THIS STUDY

age	no of respondents	percentage totals
18-29	17	3.3
30-39	19	3.7
40-59	168	32.7
60-79	272	52.9
80+	38	7.4

Figure 8.2

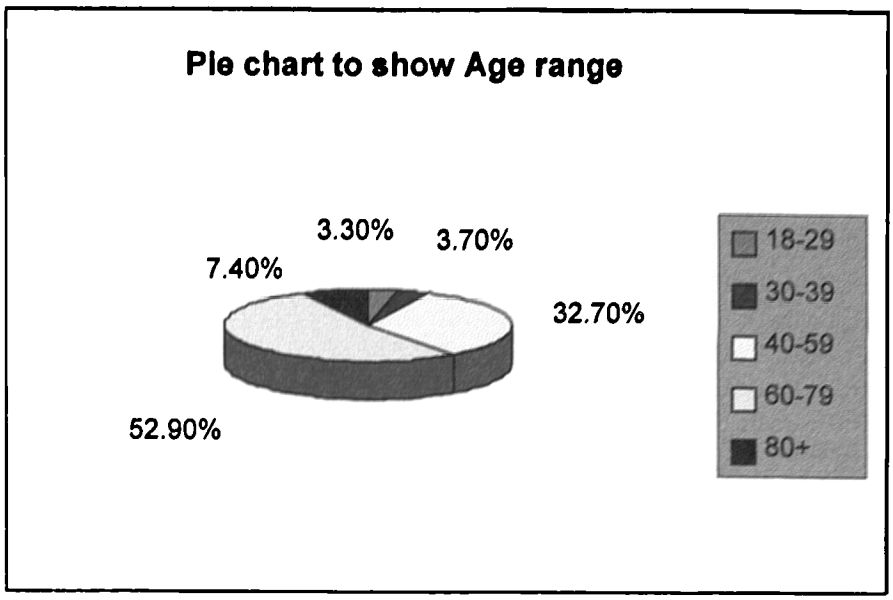


TABLE 8.3 COMPARISON AGE RANGE BETWEEN THE HOSPITAL STATISTICS AND THIS STUDY

age	No of Res 1	No of Res 2	% total 1	% total 2
18-	17	23	3.3	2.67
30-	19	48	3.7	5.56
40-	168	199	32.7	23.06
60-	272	402	52.9	46.58
80+	38	191	7.4	22.13

1 = this study 2 = hospital statistics

The data shows there to be fewer of the over 80 age range than would be expected to have participated. It could be hypothesised that this could be due to this group having more difficulty in filling out the questionnaire due to eye problems, and generally being more frail and ill.

8.6.2 Gender

In the total sample there were 301 (58.6%) females and 213 (41.4%) males. This shows that the sample is representative by gender.

8.6.3 Sent By

In the whole group 272 (52.9%) were sent by their own general practitioner, and 242 (47.1%) were sent by a doctor in the hospital for their Barium enema. No other referral was noted.

8.6.4 Experienced Examination

Of the total number of patients, 163 (31.7%) had experienced a Barium enema before, 351 (68.3%) had not. Thus only 31% of patients in this study had previous knowledge of the examination. The effect of having experienced a barium enema previously on the patients information levels (which is asked later in the questionnaire) with respect to those that had not ever had a barium enema are shown below.

TABLE 8.4 INFORMATION LEVELS FOR THOSE WHO HAD EXPERIENCED THE EXAMINATION BEFORE

information	no of respondents	percentage of respondents
0-1.5	84	51.85
2-3.5	38	23.46
4-5.5	22	13.6
6-7.5	9	5.56
8-9.5	6	3.7
10	3	1.85
-9	1	0.62

-9 = missing values

Taking scores 6 and above to represent patients who have received insufficient information and 0 to 5 to represent those who have sufficient information, it can be seen

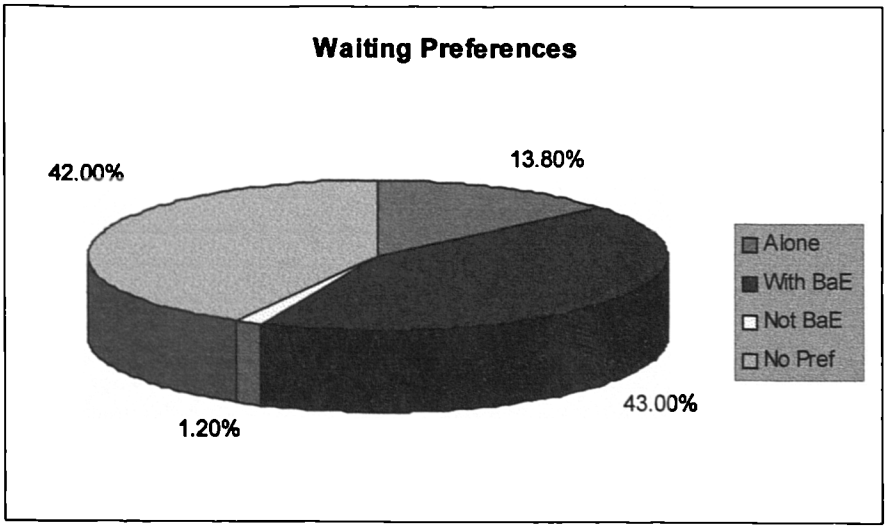
that 18 (11.04%) may be said to have insufficient information and 144 (88.34%) of patients may be said to have sufficient information about the barium enema examination.

The results above show that there is not a significant difference between the patients feelings about whether they have sufficient information and whether they have experienced a barium enema previously. See table 8.11 (sufficient information).

8.6.5 Waiting Preference

In the total sample 71 (13.8%) preferred to wait alone, 221 (43.0%) preferred to wait with other Barium enema patients, 6 (1.2%) preferred to wait with patients not having a Barium enema and 216 (42.0%) did not have a preference.

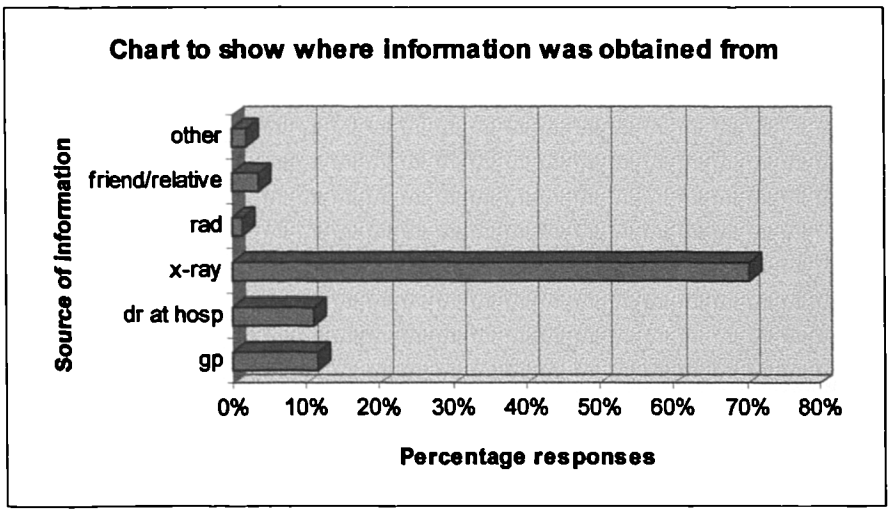
Figure 8.3



8.6.6 Information obtained from

Information concerning the examination was obtained from: general practitioners n = 60 (11.7%), doctors at the hospital n = 56 (10.9%), x-ray department n = 362 (70.4%), radiographers n = 7 (1.4%), friend/relative n = 19 (3.7%), other n = 10 (1.9%). This shows that only 116 (22.6%) of patients received information about the examination from the individual who referred them. The standard information from the x-ray department is simply a preparation sheet with brief examination explanation. For the purposes of this study this is beneficial as 70% of the sample will be included in the calculations concerning the effect of the information booklet. It must however be noted that the standard hospital information is distributed with each patients appointment. Therefore all of the respondents will have received the standard hospital information.

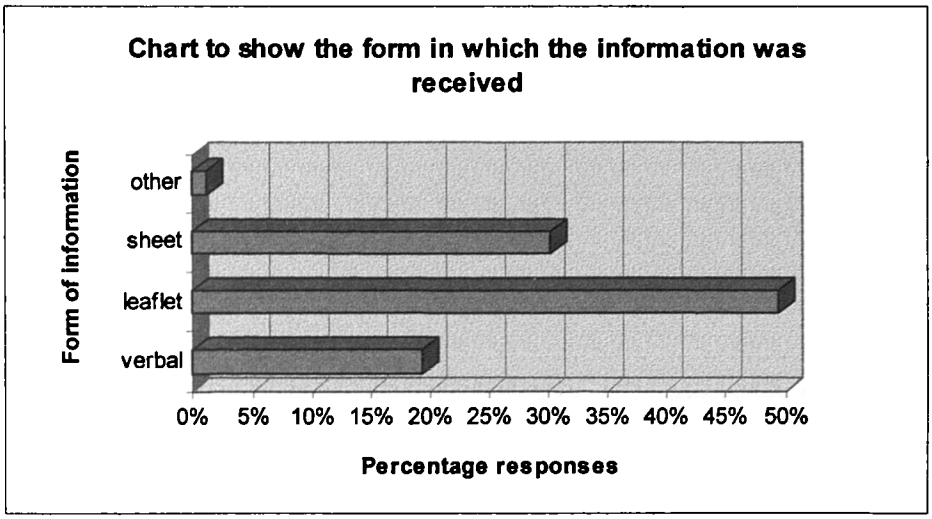
Figure 8.4



8.6.7 Form of information

Of the total number of respondents 99 (19.3%) received only verbal information, 254 (49.4%) received the written leaflet, 155 (30.2%) received the standard information sheet provided by the hospital and 6 (1.1%) received some other form of information.

Figure 8.5



8.7 Visual Analogue Scale

For questions 8,11 and 12 on the first questionnaire, respondents were asked to indicate their anxiety levels and satisfaction with information received by marking a cross on a 100mm horizontal visual analogue scale.

8.7.1 Anxiety levels on a normal day

Respondents were asked to place a cross on the line between the extremes 'very relaxed' and 'very anxious'. Percentage representations of patients reported anxiety are indicated below:

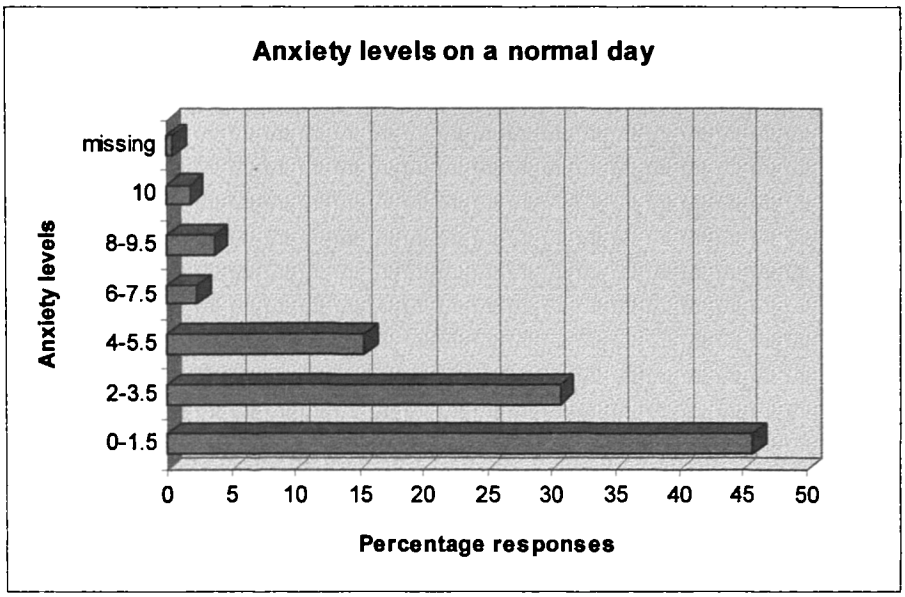
TABLE 8.5 ANXIETY LEVELS ON A NORMAL DAY

Anxiety	no of	percentage of respondents
0-1.5	235	45.7
2-3.5	158	30.7
4-5.5	79	15.4
6-7.5	12	2.3
8-9.5	19	3.7
10	9	1.8
-9	2	0.4

-9 = missing values

Taking scores 6 and above to represent anxious patients and 0 to 5 to represent non anxious patients, it can be seen that 40 (7.8%) of patients are anxious and 472 (91.8%) of patients are not anxious on a normal day.

Figure 8.6



8.7.2 Anxiety levels before the Barium enema

Respondents were asked to place a cross on the line between the extremes 'very relaxed' and 'very anxious'.

Percentage representations of patients anxiety are indicated below:

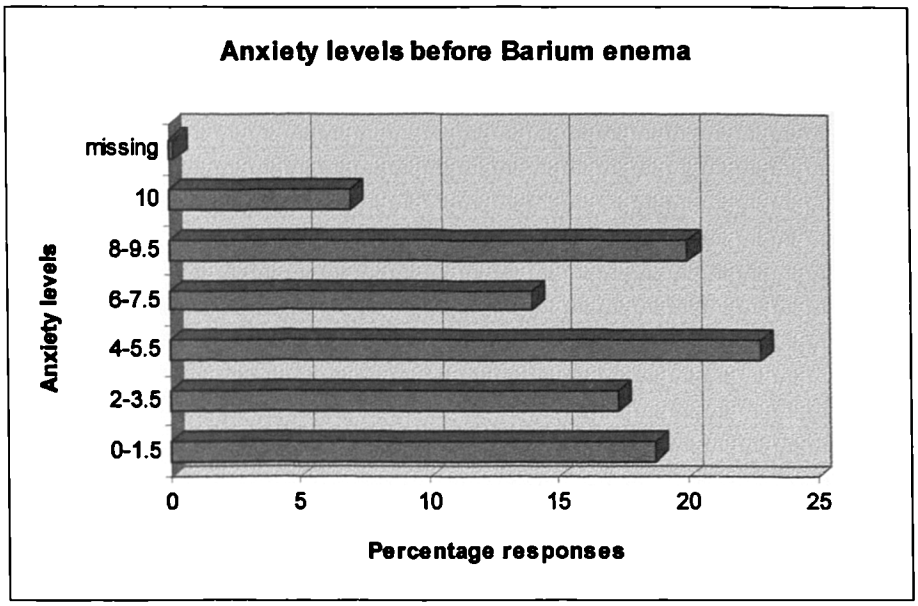
TABLE 8.6 ANXIETY LEVELS ON THE DAY OF THE BARIUM ENEMA

Anxiety	no of respondents	percentage of respondents
0-1.5	96	18.7
2-3.5	89	17.3
4-5.5	117	22.8
6-7.5	72	14
8-9.5	103	20
10	36	7
-9	1	0.2

-9 = missing values

Taking scores 6 and above to represent anxious patients and 0 to 5 to represent non anxious patients, it can be seen that 211 (41%) of patients are anxious and 302 (58.8%) of patients are comparatively relaxed on the day of their Barium enema examination.

Figure 8.7



In this phase of the research the interval scale responses are shown above to demonstrate how anxious the respondents felt on the day of the examination and on a normal day. Frequency of responses and charts showing the distributions are shown in appendix 11.

It can be seen from the results that the anxiety scores given by the patient to represent how they feel on a normal day and how they feel just before their barium enema, that the mode score is 1.0 and the mean value is 2.544 with a standard deviation of 2.265 on a normal day. This changes to a mode score of 5.0 with a mean value of 5.153 with a standard deviation of 3.126 for the day of the examination. It can be seen that 92.2% of respondents had scored by the 5.5 level of the visual analogue scale for a normal day, however at the 5.5 level on the day of the examination only 58.9% had responded, for

this scale, scores were at 9.5 when a 93% response was recorded. Therefore there is an initial immediate appearance of difference in anxiety levels.

Boxplots of the data from *feel now* and *feel normally* are shown below with reference to sex.

Figure 8.8

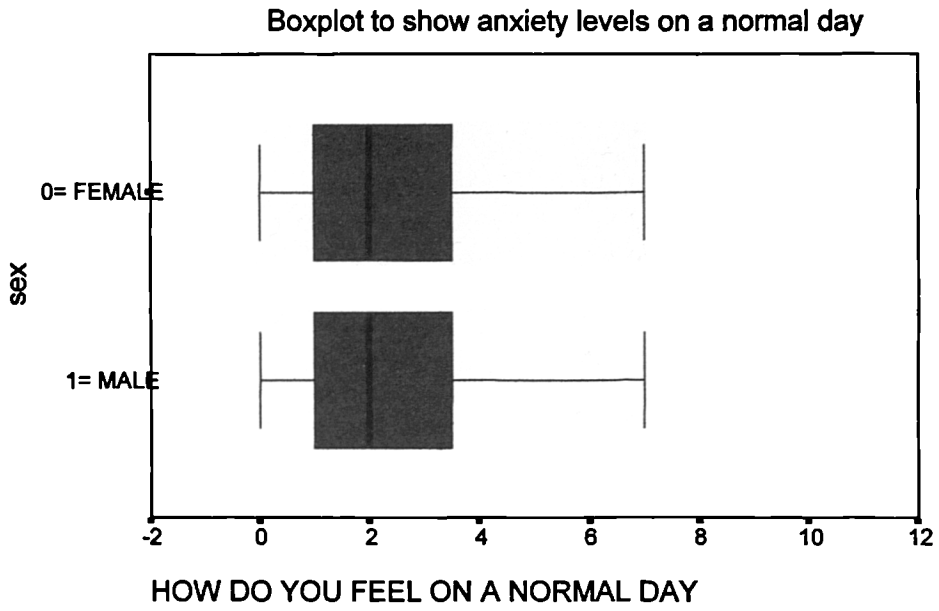
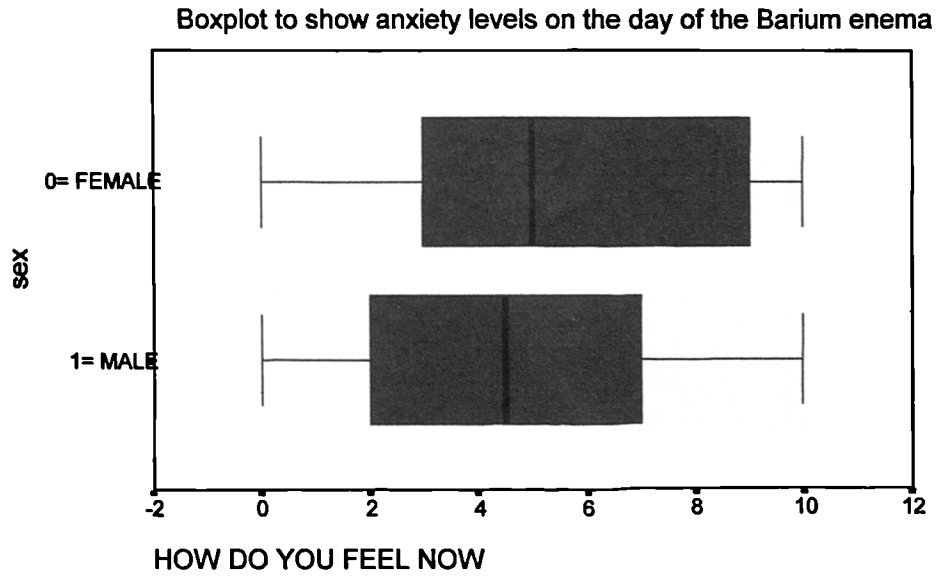


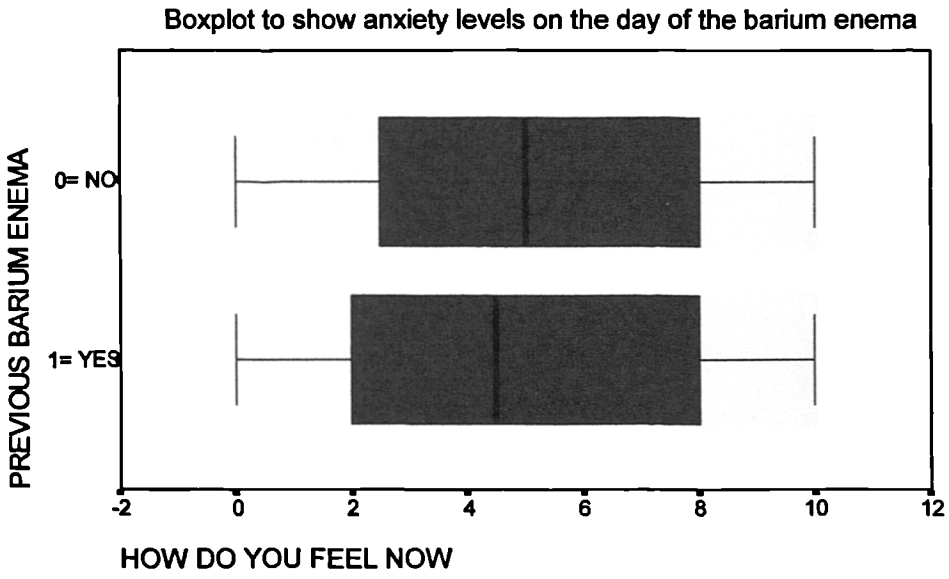
Figure 8.9



The boxplots of anxiety levels with reference to sex demonstrate visually the quartile spread of the anxiety scores for both the normal day and examination day situations. It can be seen from this that the lower quartile, median and upper quartile spreads are very dissimilar. On the normal day plot both sexes show a similar median and 3 point spread. However on the examination day, scores for males show a 6 point spread and for females a 7 point spread, with the median for the female subjects slightly increased from the males. This again demonstrates elevated anxiety on the day of the examination, with the interesting addition of females showing greater levels of anxiety.

Respondents were asked to indicate whether they had had a previous barium enema, the effect of this on their anxiety levels was investigated.

Figure 8.10



The boxplot of anxiety levels on the day of the examination with reference to whether the respondents had experienced a barium enema previously demonstrates the quartile spread of the anxiety scores. It can be seen from this that the spreads are very similar, with the median and lower quartile being marginally less for those who had previous

experience. Thus, having a barium enema previously has not appear to show any significant difference in anxiety from a patient who has not previously experience the examination.

8.8 Sufficient Information

Respondents were asked to place a cross on the line between the extremes 'strongly agree' and 'strongly disagree', to indicate whether they felt that they had received sufficient information about the Barium enema examination. Percentage representations of how strongly patients agreed that they had sufficient information are indicated in table 8.7 below.

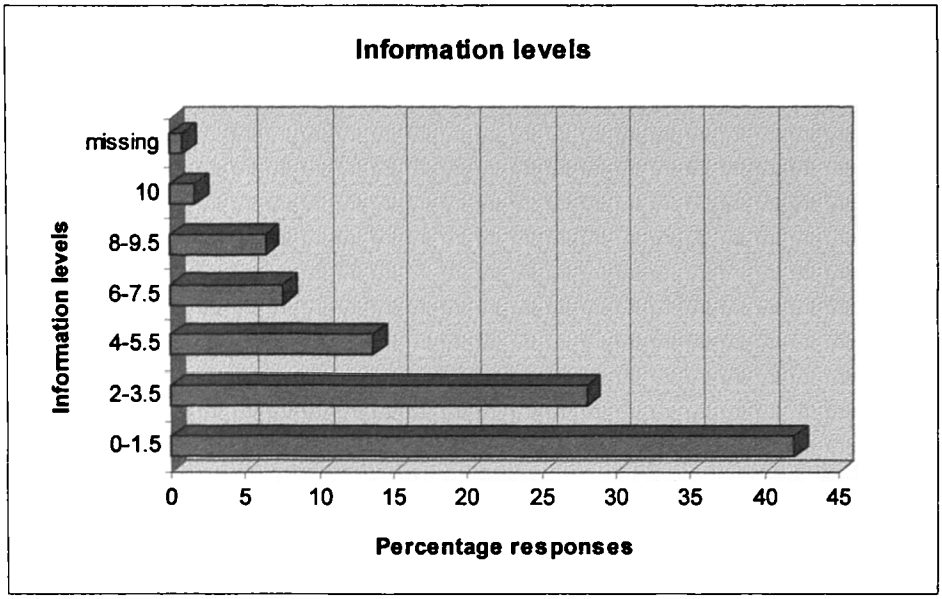
TABLE 8.7 INFORMATION LEVELS

Information levels	no of	percentage of respondents
0-1.5	216	42
2-3.5	144	28
4-5.5	70	13.6
6-7.5	39	7.6
8-9.5	33	6.4
10	8	1.6
-9	4	0.8

-9 = missing values

Taking scores 6 and above to represent patients that disagree that they have sufficient information and 0 to 5 to represent patients that feel that they have sufficient information, it can be seen that 80 (15.6%) of patients feel that they have insufficient information and 430 (83.6%) of patients feel that they have sufficient information about the Barium enema examination.

Figure 8.11



8.8.1 Information levels with the written leaflet

From the responses to the form of information and the information level questions, percentage representation of information levels for patients who have stated that they have received a leaflet can be seen below in table 8.8.

Responses are given on the 10 point visual analogue scale with ten representing 'strongly disagree' and zero representing 'strongly agree' to having sufficient information.

254 patients fit into this category which is 49.4% of the total sample

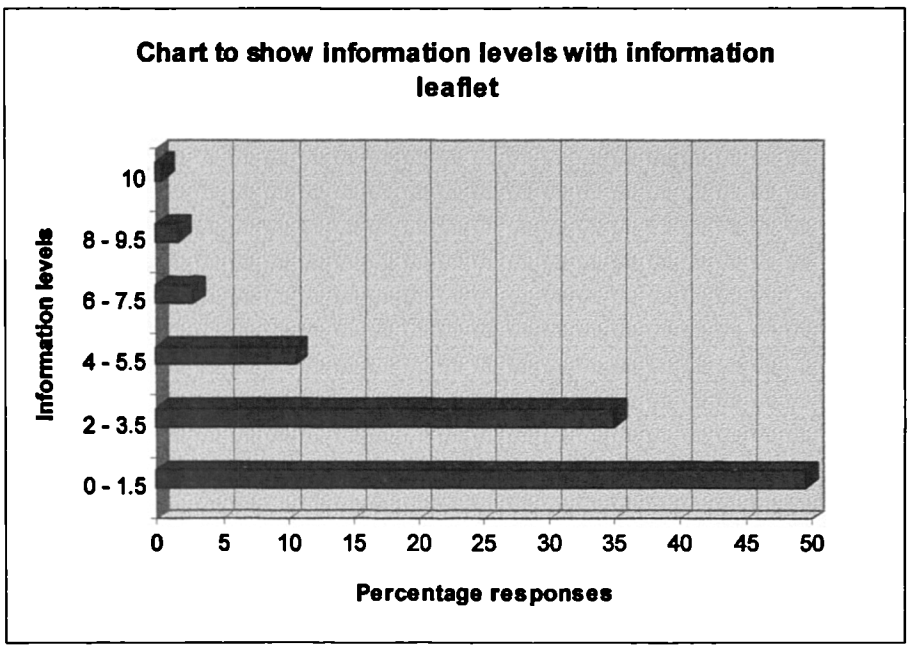
TABLE 8.8 INFORMATION LEVELS OF THOSE WHO HAD THE INFORMATION LEAFLET

Information levels	no of respondents	percentage of respondents
0-1.5	126	49.6
2-3.5	89	35
4-5.5	27	10.6
6-7.5	7	2.8
8-9.5	4	1.6
10	1	0.4
-9	0	0

-9 = missing values

Taking scores 6 and above to represent patients who have received insufficient information and 0 to 5 to represent those who have sufficient information, it can be seen that 12 (4.8%) of patients have insufficient information and 242 (95.2%) of patients have sufficient information about the barium enema examination when they have received the information booklet.

Figure 8.12



8.8.2 Information levels with the standard hospital information

From the responses to the form of information and the information level questions, percentage representation of information levels for patients who have stated that they have received the standard hospital information can be seen below. Responses are given on the 10 point visual analogue scale with ten representing 'strongly disagree' and zero representing 'strongly agree' to having sufficient information.

155 patients fit into this category which is 30.2% of the total sample.

TABLE 8.9 INFORMATION LEVELS OF THOSE WHO HAD THE HOSPITAL INFORMATION

Information levels	no of respondents	percentage of respondents
0-1.5	52	33.5
2-3.5	32	20.6
4-5.5	24	15.5
6-7.5	21	13.6
8-9.5	19	12.3
10	4	2.6
-9	3	1.9

-9 = missing values

Taking scores 6 and above to represent patients who have received insufficient information and 0 to 5 to represent those who have sufficient information, it can be seen that 44 (28.5%) of patients have insufficient information and 108 (69.6%) of patients have sufficient information about the barium enema examination when they have received the standard hospital information.

Figure 8.13

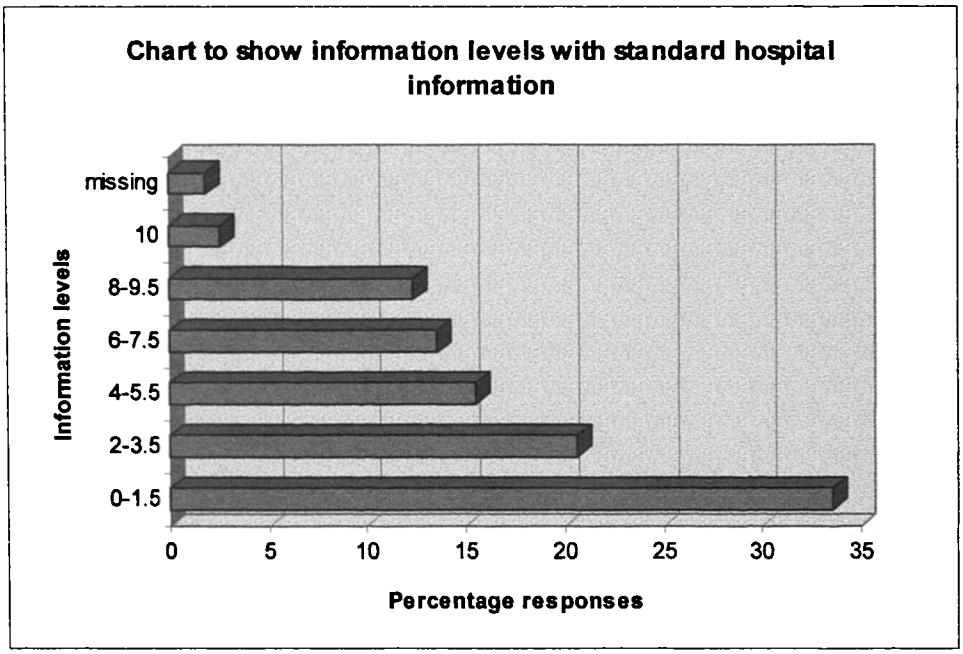
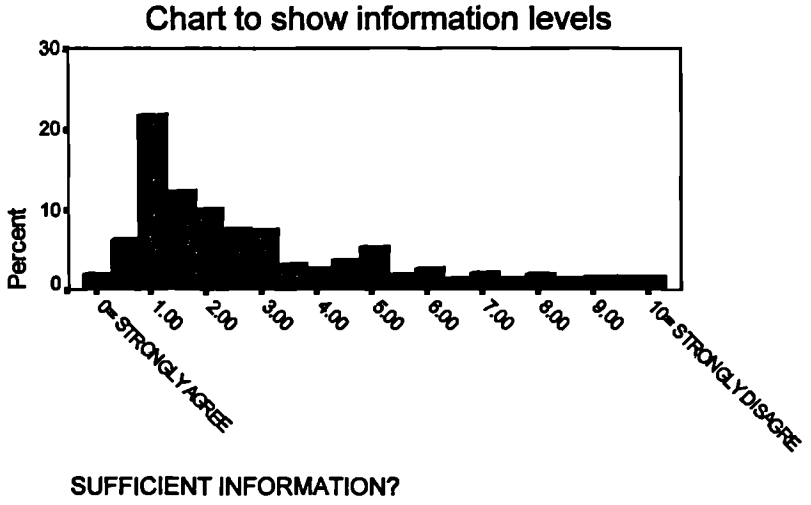


Figure 8.14



The distribution shown in Figure 8.14 demonstrates that the patients (standard and information leaflet groups combined) feel that they have sufficient information, with a mode score of 1.0 and a mean value of 3.037. The frequency distribution (See appendix 12) shows that 84.3% of respondents had scored by the 5.5 level, with 60% having scored by the 2.5 level. This data addresses the hypothesis that:

'Patients consider that they have sufficient information prior to the barium enema examination'

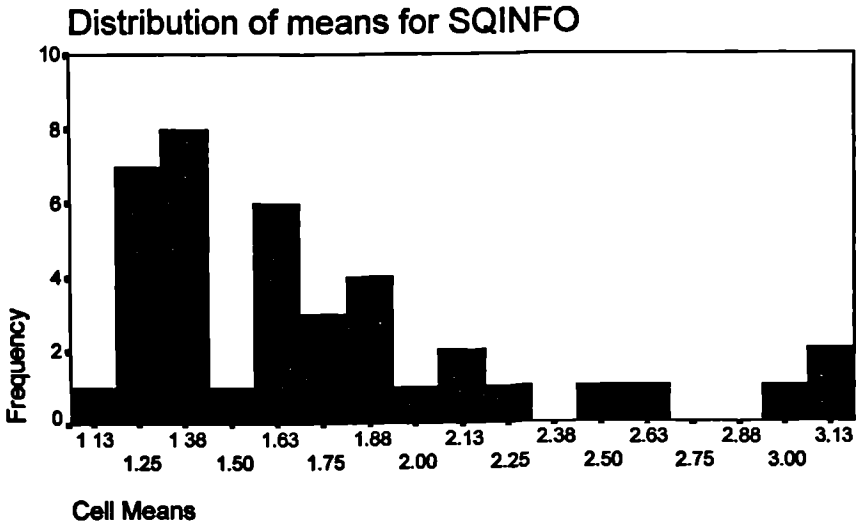
At this stage it appears that this hypothesis could be accepted, however, further analysis will be carried out to take various factors into account in an attempt to address the hypothesis in more depth.

Because of the shape of the distribution of the data non parametric testing was carried out to test whether there was a significant difference in the respondents feelings about whether they had sufficient information between those that had received the standard hospital information and those that had received the information leaflet. The non parametric Mann Whitney U and Wilcoxon Rank sum W test gave a significance value

of $p < 0.05$ showing that there is a significance between the two variables. See appendix 13 for statistical data.

Due to the distribution of the scores away from a normal distribution, the square root of all of the scores was taken, in an effort to bring the scores to as close to a normal distribution as possible for further analysis. See figure 8.15 below

Figure 8.15



SQINFO = square root of information scores

An analysis of variance was carried out (See appendix 14) which took sex, age, who sent the patients for their barium enema, and the form of information they received into account. One and two way analyses were carried out to test for the influence of these factors on whether the respondents felt that they had sufficient information. The form of information given was the only factor shown to have any significant effect on the feeling of having sufficient information.

8.9 Anxiety levels before the Barium enema with insufficient information received

From the responses to the anxiety level and information level questions, percentage representation of anxiety levels before the Barium enema examination for patients who have stated that they received insufficient information can be seen below. Responses are given on the 10 point visual analogue scale with ten representing 'very anxious' and zero representing 'very relaxed'. 80 patients fit into this category which is 15.7% of the total sample.

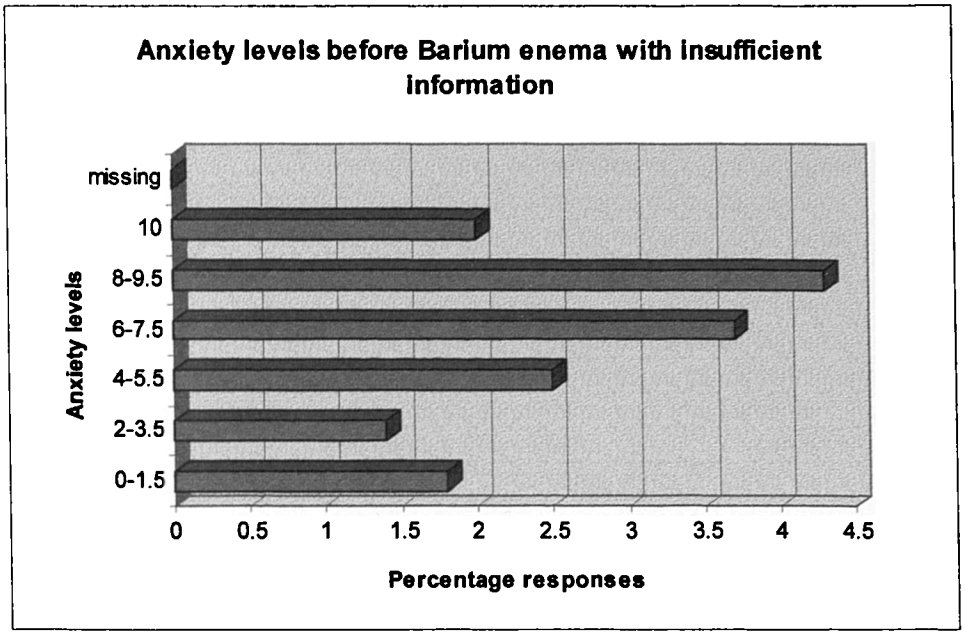
TABLE 8.10 ANXIETY LEVELS BEFORE THE ENEMA OF THOSE WHO FELT THEY HAD INSUFFICIENT INFORMATION

Anxiety	no of respondents	percentage of respondents
0-1.5	9	1.8
2-3.5	7	1.4
4-5.5	13	2.5
6-7.5	19	3.7
8-9.5	22	4.3
10	10	2
-9	0	0

-9 = missing values

Taking scores 6 and above to represent anxious patients and 0 to 5 to represent non anxious patients, it can be seen that 51 (63.8%) of patients are anxious and 29 (36.25%) of patients are not anxious when they are attending for a Barium enema examination and feel that they have insufficient information.

Figure 8.16



8.9.1 Anxiety levels before the Barium enema examination with sufficient information received

From the responses to the anxiety level and information level questions, percentage representation of anxiety levels before the Barium enema examination for patients who have stated that they have received sufficient information can be seen below (Table 8.11 & Figure 8.17). Responses are given on the 10 point visual analogue scale with ten representing 'very anxious' and zero representing 'very relaxed'. 429 patients fit into this category which is 83.5% of the total sample.

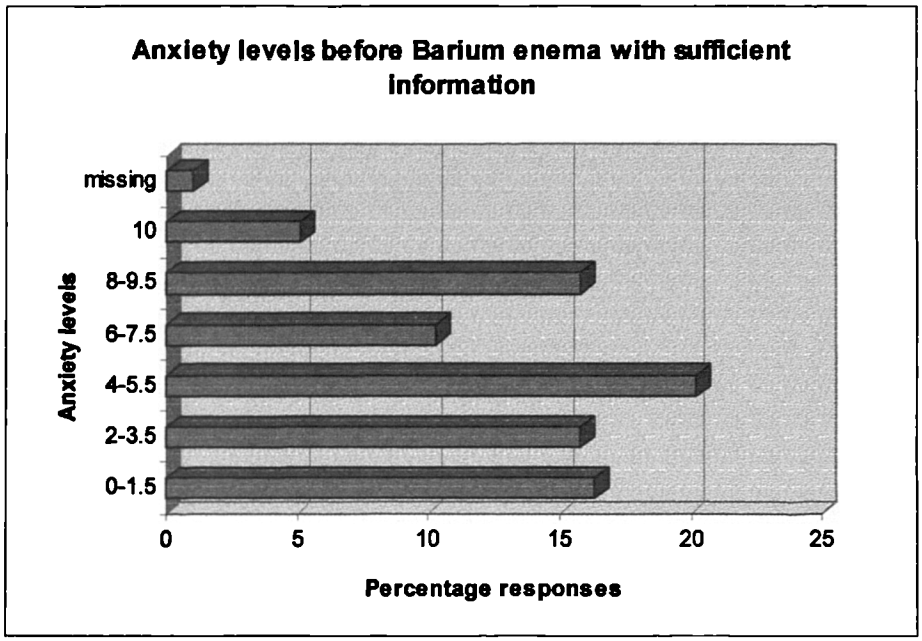
TABLE 8.11 ANXIETY LEVELS BEFORE THE BARIUM ENEMA FOR THOSE WHO FELT THEY HAD SUFFICIENT INFORMATION

Anxiety	no of respondents	percentage of respondents
0-1.5	84	16.3
2-3.5	81	15.8
4-5.5	104	20.2
6-7.5	53	10.3
8-9.5	81	15.8
10	26	5.1
-9	5	1

-9 = missing values

Taking scores 6 and above to represent anxious patients and 0 to 5 to represent patients that feel that they are not anxious, it can be seen that 160 (31.2%) of patients are anxious and 269 (52.3%) of patients are not anxious when they are attending for a Barium enema examination and feel that they have sufficient information.

Figure 8.17



8.9.2 Significant Differences in repeated Anxiety Levels

Further analysis was carried out in an effort to establish any factors that affected the anxiety levels before a barium enema examination.

A general factorial analysis of variance was employed which analysed the following factors with respect to the respondents anxiety; age, sex, who sent them for the examination, the form of information they had received and the laxative preparation they had had. An analysis of variance was considered the most appropriate statistical procedure as it describes the extent, direction and strength of the relationship between several independent variables and a single dependent variable, see table 8.12 below:

TABLE 8.12 ANOVA OF EFFECT ON CHANGE IN ANXIETY LEVELS BEFORE A BARIUM ENEMA

Tests of Significance for change in anxiety using sequential Sums of Squares

Source of Variation		SS	DF	MS	F	sig F
WITHIN+RESIDUAL		77.34	393	0.2		
SEX		1.62	1	1.62	8.22	0.004
GRPAGE		2.26	4	0.56	2.87	0.023
SENDER		0.43	2	0.22	1.09	0.336
FORM		3.24	1	3.24	16.46	0
PREP		0.04	1	0.04	0.2	0.657
SENDER * SEX		1.19	2	0.6	3.03	0.049
FORM * PREP		1.2	1	1.2	6.11	0.014
(Model)		9.98	12	0.83	4.23	0
(Total)		87.32	405	0.22		
R-Squared =	0.114					
Adjusted R-Squared =	0.087					

From the above table it can be seen that sex, age, form, sender by sex, and form by preparation are shown to affect the anxiety levels. Summaries of the single factors and the individual effects on anxiety were demonstrated, following this t - tests were carried out on the variables to further locate the effects. (See appendix 15)

8.9.2.1 Test Summary

Three variables showed remarkable effects on anxiety, these being; age, gender and form of information.

Greater change in anxiety levels was shown by the two younger age groups; 18-29 and 30-39.

Gender was shown to be significant at the 0.001 level with females showing greater change in anxiety than males.

Statistical significance of the effectiveness of reducing anxiety of the information booklet against the standard hospital information sheet was tested using a t - test which showed a 2 - tail significance of 0.0001 (see tables A15.7,A15.8 and A15.8.1 appendix 15). Further analysis was carried out looking at the data from the visual analogue scale asking respondents whether they felt that they had sufficient information, a t - test showed a 2 - tailed significance of 0.0001 for how the patients felt before the barium enema (see tables A15.10 and A15.10.1 appendix 15). Table A15.11 and A15.11.1 show that there is no effect between the feeling (or not) of having sufficient information on a normal day.

Data collated from those who received the information booklet designed for this study showed 95.2% of those receiving the information booklet felt that they had sufficient information compared with 69.6% who on receiving the standard hospital information felt that they had sufficient information.

8.9.3 State Trait anxiety inventory

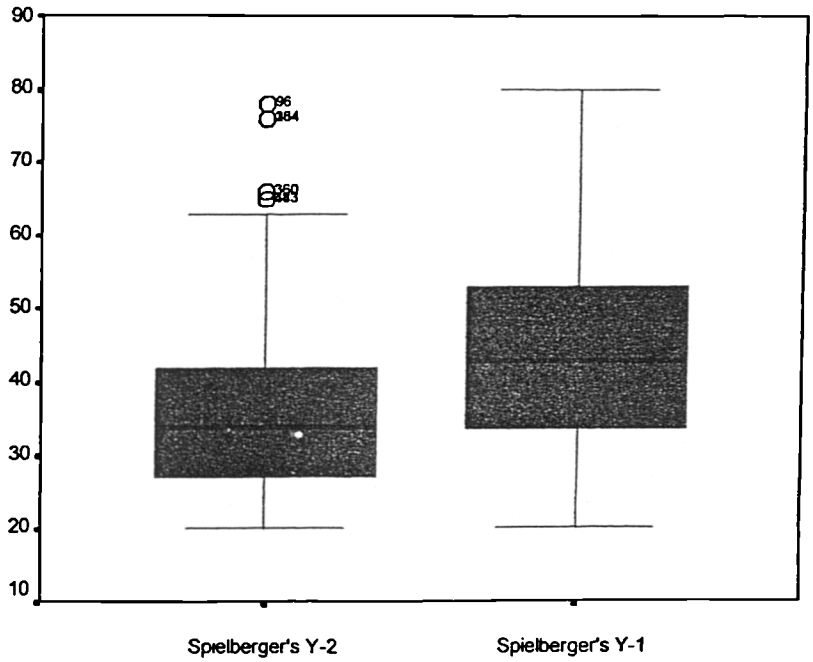
Spielbergers STAI form Y self evaluation questionnaire was given to the patients to complete. Each of the forty items was given a weighted score from 1 to 4 using the score card. Scores for both state (y1) and trait (y2) can range from a minimum of twenty to a maximum of eighty. The scores in this study ranged from 20 to 80 for y1 and 20 to 78 for y2.

From preliminary analyses it is suggested that the scores from this psychometric testing correlate with the scores from the visual analogue scale for testing the anxiety levels of patients on a normal day and before a barium enema. If further analysis shows this to be

correct then in it may be suggested that in a study of this kind a visual analogue scale would be sufficient for testing this area.

Boxplots of the Y1 and Y2 scores demonstrate visually the quartile spread of the State and Trait anxiety scores respectively (see figure 8.18. The Y2 plot corresponds to 'a normal day' and the Y1 to 'the day of the examination'. The difference in the spread of the scores is immediately visible. This data as with that from the visual analogue scales demonstrates elevated anxiety about the examination.

Figure 8.18 Boxplots of Y1 and Y2 scores



8.9.4 Analysis of anxiety correlated to the form of information

One way analysis of variance was carried out to test for significance between anxiety scores: before the barium enema, on a normal day, STAI y1, STAI y2 and the forms of information given to the patients.

On the data from how respondents feel on a normal day against the form of information they received, as expected there was no significant difference at the 0.05 level with a Student-Newman-Keuls test. The same analysis of variance on the data from how patients feel on the day of their barium enema and the form of information they received was carried out. This showed the leaflet group with the lowest mean score of 4.4723 with the total mean being 5.1530, showing that the leaflet group were less anxious on the day of the barium enema.

8.10 Questionnaire Part two

This part of the questionnaire was completed by the patients after the barium enema examination.

8.10.1 Sufficient Information

460 (89.5%) of the respondents indicated that they felt they had sufficient information and 42 (8.2%) of the respondents felt that they had had insufficient information, of those 8.2% of respondents 1.6% stated additional information that they would have liked to have received. 12 (2.3%) respondents did not answer the question.

8.10.2 Feelings about the examination

271 (52.7%) of the respondents felt that the barium enema was better than they had expected, 200 (39.0%) felt that it was just as they expected and 31 (6.0%) felt that it was worse than they had expected the examination to be. 12 (2.3%) respondents did not answer the question. Only 43% of the respondents stated that the barium enema was worse or just as they expected. Leaving 52.7% of respondents feeling that it was better than they expected. The reason for the respondents finding the examination better than they expected needs to be identified. It could be interpreted that if patients knew more

about the examination then they could have a more realistic perception of what was going to happen to them. Thus, they would be informed and would therefore find the examination as they expected, and this would probably lead to fewer anxious patients and greater patient satisfaction.

8.10.3 Wished had not known

486 (94.6%) of the respondents indicated that there was not anything about the examination that they wished they had not known, 16 (3.1%) of the respondents indicated that there was something they wished they had not known about, 4 (0.8%) of these gave additional information. In all cases this was the injection.

8.10.4 Anxious

263 (51.2%) of respondents stated that they were anxious and 240 (46.7%) of respondents stated that they were not anxious about attending for the Barium enema examination. Of the respondents that were anxious 72 (14.0%) indicated a reason for their anxiety; 39 (7.6%) were concerned about the outcome and 33 (6.4%) were concerned about the examination.

8.10.5 Staff explanation

467 (90.9%) of the respondents indicated that the staff did explain what was going to happen to them before it was carried out in the room. 31 (6.0%) did not receive an explanation. 16 (3.1%) did not answer the question. This does not correlate with the data from preliminary phase two which showed staff in a bad light.

8.10.6 Aftercare instructions

398 (77.4%) of respondents indicated that they had received aftercare information. Of these 18 (3.5%) did not know the correct aftercare information. 99 (19.3%) of the respondents indicated that they had not received any aftercare information. 17 (3.3%) did not answer the question.

8.10.7 Information leaflet and aftercare instructions

Of the total number of respondents 254 (49.4%) received the information leaflet designed for this study. If this group is studied for aftercare information it can be seen that 76.0% of these received the correct aftercare, 4.9% of these stated the incorrect aftercare and 24% had no aftercare. The results show that the information booklet makes no difference to the aftercare results compared with any other form of information giving to the patient before the barium enema. Therefore the information booklet can be said to be no more effective than other sources of information in giving the aftercare instructions, as the correct aftercare information is not being acquired.

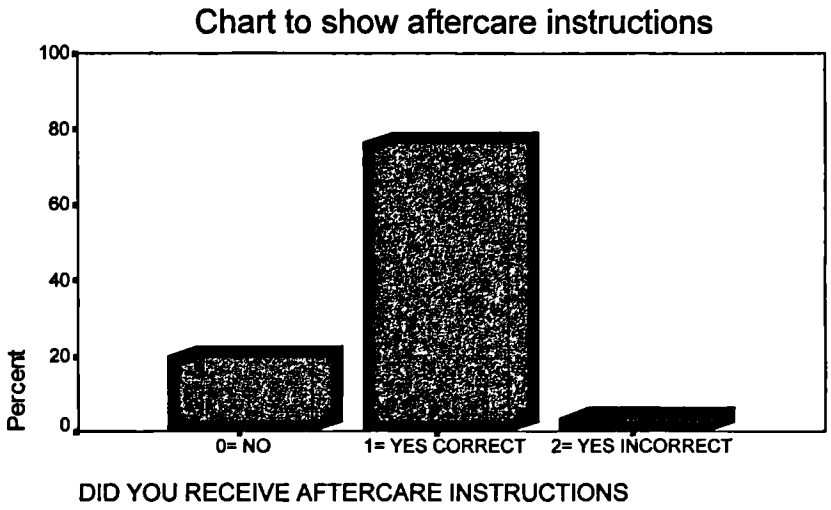
Analysis of the data from the questionnaire is shown below (Table 8.26, & Figure 8.19)

TABLE 8.26 AFTERCARE INSTRUCTIONS

AFTER - DID YOU RECEIVE AFTERCARE INSTRUCTIONS

Value Label	Value	Frequency	%	Valid %	Cum %
0=NO	0	99	19.2	19.9	19.9
1= YES CORRECT	1	380	73.6	76.5	96.4
2– YES INCORRECT	2	18	3.5	3.6	100.0

Figure 8.19



The responses shown in table 8.26 and figure 8.19 indicate that the majority of patients considered they had received the correct aftercare instructions, those that are categorised as being incorrect gave inaccurate explanations of the information. Further analysis was carried out to check whether there was an effect on the responses to the question,

'Did you receive aftercare instructions ?'

in the respondents who had received the information booklet. Analysis is shown below. (Table 8.27 & 8.27a)

TABLE 8.27 AFTER DID YOU RECEIVE AFTERCARE INSTRUCTIONS BY FORM WHAT FORM OF INFORMATION

Count	0=verbal	1=leaflet	2=sheet	3=other	row total
0 = No	21	59	18	1	99
	19.1	49.0	29.7	1.2	19.9%
1 = Yes	72	175	129	4	380
correct	73.4	188.1	113.9	4.6	76.5%
2 = Yes	3	12	2	1	18
incorrect	3.5	8.9	5.4	0.2	3.6%
Column	96	246	149	6	497
Total	19.3%	49.5%	30.0%	1.2%	100%

17 respondents were omitted from this calculation as they provided insufficient information in the questionnaire

Various statistical tests were employed to test for a relationship between the form of information and aftercare information. There was shown to be no significant difference between the form of information and whether respondents felt that they had the correct aftercare information.

TABLE 8.27A

Chi-Square	Value	DF	Significance
Pearson	15.95475	6	.01400
Likelihood Ratio	15.77787	6	.01500
Mantel-Haenszel test for linear association	2.90925	1	.08807

Minimum Expected Frequency - .217

Cells with Expected Frequency < 5 - 4 OF 12 (33.3%)

8.11 Discussion of Results

This chapter has outlined and discussed the results of the main stage of the research, which presents the findings of five hundred and fourteen questionnaires completed by barium enema patients carried out over a six month period in two x-ray departments in North Wales and one x-ray department in Shropshire. Questionnaires were used with patients both prior to and after their barium enema examination in order to gain an overall picture of their satisfaction with the examination as a whole. Special attention was paid to ascertain their levels of anxiety and satisfaction with information received.

This was the main information gathering investigation carried out to collect a large scale of information from patients concerning their feelings about their barium enema examination. It was also carried out to test the effect on their anxiety levels of a specially designed information leaflet developed in an effort to address some of the issues highlighted by the preliminary phases of the research.

Analysis of the data showed 67.6% of the respondents to have elevated levels of anxiety on the day of the barium enema compared to a normal day. Having had a barium enema previously did not have a significant effect on this. Females were shown to have slightly higher anxiety levels than males. Although overall 83.6% of the total respondents felt that they had sufficient information, of those who had received the leaflet 95.2% felt they had sufficient information against 69.6% of those who had the standard hospital information. Mann Whitney U and Wilcoxon Rank sum W tests suggested that a relationship exists between the form of information and whether respondents feel that they have sufficient information ($p<0.05$). From further analysis it can be reported that there is a stronger feeling of having sufficient information in those that received the leaflet designed for this study.

A general factorial ANOVA was used to determine the effect of a number of variables on the change in anxiety levels before a barium enema examination. t - tests on highlighted variables showed the leaflet group to have a lower mean level of change of

anxiety compared to those that received the standard hospital information sheet. Greater change in anxiety was shown to be experienced by those respondents in the lower two age groups with those over forty years of age showing lower levels of change of anxiety. Males were shown to have less change in their anxiety levels than females which correlates with the earlier data showing that females exhibited greater levels of anxiety.

The hypotheses were tested and the results from this section will be discussed in detail in chapter 10. The next section attempts to continue the holistic theme of this research in following up questionnaire respondents who have left their name and address, and interviewing them about their experiences.

9. Fourth study

A series of interviews were carried out with people who had experienced a barium enema and taken part in the questionnaire study.

9.1 Aim of the study

The aims of these interviews were:

(a) To establish whether patients have any physical effects directly attributable to the barium enema after they leave the hospital

(b) To establish whether patients have any psychological effects directly attributable to the barium enema after they leave the hospital

(c) To establish whether there is any difference in after effects experienced by patients who received the information leaflet in the third study

This study targeted patients who had participated in the previous study and had voluntarily left their name and contact number on the questionnaire that they had completed. This study enables a truly holistic picture to be drawn about the patients barium enema experience as they have been targeted from the scheduling of their appointment and are now being followed up after they have experienced the procedure. This sample like that in study two has the disadvantage of self selection, and the inherent bias is recognised.

9.2 Subjects

Follow up interviews (n=23)

(a) Hospital A respondents (n=13)

(b) Hospital B respondents (n=6)

(c) Hospital C respondents (n=4)

9.3 Procedures

The purpose of the follow-up interviews was to attempt to further quantify the trends that had been emerging from the first three stages of the research. Respondents were questioned in an attempt to elicit information that tested the developing hypothesis that physical and psychological after effects were most common in those who felt that they had insufficient information. The interviews at this stage were structured in an attempt to elicit the specific information.

Telephone interviews were used due to their being synonymous with a high response rate and speed of execution (Oppenheim, 1992).

9.4 Interviews

The subjects were given a brief explanation of the research and asked if they were still willing to participate. All of those who had left their name were contacted (n=23) were willing to be interviewed. The interview was recorded on a predesigned interview guide developed from the preliminary phases of the research (See appendix 16).

9.5 Results

Data collected at this stage has not proved as rich as in the preliminary phases. However, there are still problems being highlighted and a great depth of feeling expressed by some who felt that it was not a pleasant experience. Each main area of the examination that was covered in the interviews is discussed below before being depicted in table form. (see appendix 17 for raw response data)

9.6 Preparation

This area was not given great attention by most patients. There are 8.69% (n=2) of responses from the total sample in this area, and these are negative.

'The laxative was the worst thing' (4:2)
'The laxative kept me on the toilet all the time' (4:5)

9.7 Explanation about the examination

The patients were asked if they had known what to expect when they went in for their examination. This area as in the previous studies showed information being acquired from a number of sources. There were also those who felt that they had no information.

'I knew what to expect from the leaflet' (4:17)
'I had the leaflet - it explained it all' (4:21)
'The little booklet with the appointment explained it all' (4:22)

'My wife told me what would happen' (4:13)
'My Dad told me the gory details - he's had one' (4:14)
'I didn't know what they were going to do to me' (4:19)

9.8 Feelings about the examination

The patients were asked to explain how they felt about having the examination.

'I wasn't bothered about having it done' (4:1)
'I was apprehensive about the unknown' (4:2)
'I just wanted to get it over with' (4:3)
'I was relieved to be getting something done' (4:4)
'I was frightened of what would be done' (4:7)
'I was worried but ok' (4:10)
'I was anxious' (4:14)
'I'd rather have something else done like surgery' (4:18)
'I was told to get up there, turn over etc.' (4:5)
'Everyone was nice' (4:17)
'They shouted at me' (4:19)
'They were very helpful (staff)' (4:20)
'The staff were very helpful, very patient' (4:21)

The latter statements illustrate how the patients' felt they were being treated in the X-ray room. This correlates with data from the second study. This is an area that staff should be aware of as the recollection of the staff seems to have a lasting impression on these patients.

9.9 After the examination

This study was particularly concerned with following up how the patients felt after they had left the X-ray department. They were specifically asked if they had experienced any physical or psychological effects following the examination, that were directly attributable to it. A sample of replies reflecting the full range of responses are given below:

'I had terrible stomach pains after' (4:2)

'I had a lot of pain after' (4:4)

'I collapsed at work the next day' (4:5)

'I had bad constipation afterwards' (4:10)

'I had bad diarrhoea for 3 days afterwards' (4:13)

'I had a terrible headache after' (4:19)

No respondents reported any psychological problems after the examination. There were however, a variety of physical problems and also concerns voiced.

9.10 Data Coding

The responses from this group took the form of notes recorded on a predesigned interview guide. The content of the responses were broken down and entered into the database Microsoft Office Professional Access for classification and grouping. From 23 respondents 235 responses were recorded and 26 categories generated. The content analysis produced 7 categories with 26 sub categories. Each entry was identified by hospital alone. A breakdown of the categories are given below in table 9.1.

TABLE 9.1

CODE	DESCRIPTION	No	%
1.1	ANXIOUS-EXPRESSING CONCERN-	15	6.38
1.2	NOT ANXIOUS	7	2.98
1.3	ANXIOUS ABOUT OUTCOME	2	0.85
1.4	WORRIED UNNECESSARILY	6	2.55
1.5	FEAR OF CANCER	9	3.83
2.1	INFORMATION ENOUGH/GOOD	7	2.98
2.2	INFORMATION NOT ENOUGH/NONE/FROM	16	6.81
2.4	DIET INSTRUCTIONS INSUFFICIENT	1	0.43
3.1	AFTERCARE -GIVEN /CORRECT	13	5.53
3.2	AFTERCARE -NOT GIVEN/INCORRECT	9	3.83
3.3	LAXATIVE PROBLEMS	2	0.85
3.4	PHYSICAL PROBLEMS AFTER	23	9.79
3.6	NO PHYSICAL PROBLEMS AFTER	5	2.13
3.7	NO PSYCHOLOGICAL PROBLEMS AFTER	2	0.85
4.1	STAFF GOOD/EXPLAIN/KIND/HELPFUL	19	8.09
4.2	STAFF NOT GOOD/NO EXPLANATIONS	3	1.28
4.3	STAFF CHECKED PT BEFORE THEY LEFT	12	5.11
4.4	PT NOT CHECKED BEFORE THEY LEFT	11	4.68
5.1	JUST AS EXPECTED	7	2.98
5.2	BETTER THAN EXPECTED	12	5.11
5.3	WORSE THAN EXPECTED-HORRIBLE	5	2.13
6.1	WOULD HAVE ANOTHER BARIUM ENEMA	20	8.51
6.2	WOULD NEVER HAVE ANOTHER BARIUM	2	0.85
7.1	LIKED LEAFLET +VE COMMENTS	20	8.51
7.3	LEAFLET DECREASED ANXIETY	6	2.55
7.4	LEAFLET INCREASED ANXIETY	1	0.43

Table to show category percentage totals

TABLE 9.2

CATEGORY	DESCRIPTION	% TOTAL
1	ANXIETY	16.59
2	INFORMATION	10.22
3	PROBLEMS	22.98
4	STAFF	19.16
5	EXPECTATIONS	10.22
6	BARIUM ENEMA	9.36
7	LEAFLET	11.49

Category 1

16.59% of the total responses related to anxiety. 2.98% (n=7) of responses indicated that the patients were not anxious before their barium enema. 6.38% 9n=15) of responses were general statements of anxiety and 0.85% (n=2) were specifically worried about the

outcome of the examination. 3.83% (n=9) stated that they were specifically worried about being told that they had cancer. 2.55% (n=6) indicated that they felt they had worried unnecessarily. This data again shows that there are a variety of areas that cause anxiety in barium enema patients.

Category 2

10.22% of the total responses related to information. 6.81% (n=16) of these responses were expressions of the information not being enough, the patient having no information or the information being from a non-medical source. 2.98% (n=7) of the responses indicated that the information was good enough for them. Only 0.43% (n=1) stated that the dietary instructions were insufficient for them. This data show comparison with the previous studies.

Category 3

22.98% of the total responses related to problems. 0.85% (n=2) of responses relate to problems encountered with the laxative preparation. The remaining problems are associated with after the examination. 5.53% (n=13) of the responses indicated correct aftercare and 3.83% (n=9) of the responses indicated incorrect aftercare. Although the responses are low, there is once again, as there has been throughout this research, the indication that aftercare information has not been taken in by the patients. 9.79% (n=23) of responses related to physical problems experienced by patients' after they had left the X-ray department. 2.13% (n=5) of responses were statements indicating that no physical effects were experienced after the barium enema. 0.85% (n=2) indicated that there were no psychological problems.

Category 4

19.16% of responses related to staff. 8.09% (n=19) of responses related to patients' feeling that they were well treated by staff in the X-ray department. Only 1.28% (n=3) of responses indicated the opposite. 5.11% (n=12) of the responses indicated that patients' were checked by staff before leaving the X-ray department. 4.68% (n=11) of

responses indicated that patients' were not checked by staff before leaving the department.

Category 5

10.22% of responses related to patients' expectations of the examination. 2.98% (n=7) indicated that it was as they expected it to be. 5.11% (n=12) indicated that the examination was better than expected. This indicates that the barium enema examination did not meet the patients' expectations.

Category 6

9.36% of responses related to whether patients' would have another barium enema if it was necessary. 8.51% (n=20) were positive. 0.85% (n=2) were negative.

Category 7

11.49% of responses related to the leaflet. 8.51% (n=20) of responses indicated positive comments about the leaflet. 2.55% (n=6) of responses specifically indicated that the leaflet decreased their anxiety. 0.43% (n=1) response specifically indicated that the leaflet increased their anxiety.

9.11 Discussion of Results

The data from this study is recognised as being potentially biased due to the sample only consisting of those who wished to be contacted and left their details on the questionnaire. The total number of respondents was twenty three, which is low in proportion to the number of questionnaires completed. Therefore, it is suggested that further investigation is necessary to determine feelings of patients post examination.

From the data gathered, it is suspected that seven respondents in this phase received the information leaflet in the main study. It is interesting to note the pattern throughout this

data. Seven respondents stated that they were not anxious, seven felt that they had enough or good information. Seven found the examination just as they expected it to be and six felt that the leaflet decreased their anxiety, whilst one felt that it had an increased effect on their anxiety. From checking the questionnaire information, it was confirmed that the seven respondents did receive the information leaflet. It is pleasing to note that the staff were generally noted for being helpful.

The area for most concern highlighted in this study is that of physical problems following the barium enema, these findings correlate with those of study two. Due to the small sample size it is suggested that this issue be investigated further.

This study has enabled a holistic picture of the barium enema to be drawn from the patients' perspective. The small sample is disappointing, however the aims have been met and correlations have been noted with the previous studies.

The following chapter will discuss the complete research in more detail and bring together the results in the context of the stated hypotheses.

10. Discussion

The results have been discussed briefly throughout the dissertation as it was felt to be more appropriate to consider the implications of the results in this way due to the nature of the work. In this chapter the results are summarised briefly, but are discussed particularly in the context of the hypotheses set out in the introduction.

The published evidence of patients' dissatisfaction with their experiences of the barium enema procedure is irrefutable (Ferguson, 1988 and Howard, 1992), as is the evidence for patients' requiring more information about their x-ray (Audit Commission, 1995).

The aim of the research undertaken was to investigate the anxiety experienced by patients attending for barium enema and evaluate the effect of information about the examination on their anxiety.

The approach adopted for the work was unique in that it followed the patients' conceptualisation of the barium enema through its whole process. This was taken as from the appointment to once the examination was over and the patient was back at home. Each section of the research had patient care and satisfaction as its focus.

The research followed three main phases:

1. Ascertaining patients' conceptualisation of the barium enema examination - components A and B. (Chapters 5 and 6)

2. Expansion of the information theme of the research by developing a study instrument and computer based information - component E. (Chapter 7)

3. Implementation of the instrument and follow up - components C and D. (Chapters 8 and 9)

10.1 Outcomes

Detailed data were gained on patients' conceptualisation of the barium enema examination by questioning them via interviews and self response questionnaires.

The 100% level of participation in the interview part 1 of the study was unexpected and pleasing. Every attempt was made to explain the rationale behind the study and the hospital status of the researcher. However, the hundred per cent participation may have been due to the need to please all concerned with their health. This could be seen as a form of taking on the sick role or feeling the pressure of professional dominance (Lawton and Rose, 1994). The researcher prefers to think that it was because the subject of the research was relevant to them and they felt that they had a contribution to make.

Development of the information tools for barium enema patients proved successful. The 'Barium Edutainment' computer programme was effective in terms of its usability and knowledge gain. There was a relatively high response rate (51.4%) for the questionnaire from the third study evaluating the information leaflet. Of those questionnaires not returned it is suggested, in part, could be from the over 80 years old age bracket patients. From the hospital statistics (Table 8.1) it can be seen that the proportion of the over eighties that would have been expected did not complete the questionnaire. Statistics show 22.13% of barium enema patients to be eighty years of age or over, this study had only 7.4% of respondents in this age bracket. Reasons for this could be frailty and reports have been made to the researcher that some patients were unable to complete the questionnaire due to visual problems and not having their glasses with them.

One hundred and fifty further questionnaires were distributed but not returned, it is felt that there were a variety of reasons for this. Firstly, patients were asked to post their completed questionnaire in the box provided in the x-ray department. This was so that they were not taken out of the hospital, where it was anticipated that they would be forgotten. Unfortunately some patients slipped away with their questionnaire. This is

known because the researcher received some questionnaires through the post. However, the proportion that were discarded or forgotten once the patient returned home cannot be calculated. It is also recognised that once the examination is over many of the patients either feel too distressed or are no longer interested in taking part in the research. Consequently, it is expected that a proportion of questionnaires will have been discarded for this reason.

Great effort was made by the researcher to encourage the patients to leave their questionnaires in the hospital. Boxes were placed in a prominent position in the waiting area, as the deterioration in response rate was expected if the questionnaires left the x-ray department with the patient. However it is appreciated that the barium enema can be a very embarrassing and distressing examination and the researcher is not surprised by the response rate.

The requirements of the research method which involved interviewing patients about a potentially distressing experience could have been perceived as threatening to them. It is suggested that this threat was kept to a minimum because of the researchers request to carry out much of this work in their homes. Thus, they were in an environment where they could be at their ease, and could feel in control. The researcher also did not wear a uniform in an effort to be dissociated from the hospital environment as much as possible. This is thought to have enhanced the richness of the qualitative data. It appears to have prevented problems of patients continually feeling the need to please and give only positive comments about hospital personnel. As it has been shown that:

> 'In general, patients are extremely reluctant to make negative or critical comments to any person concerned in their management'.
>
> (Reynolds et al, 1981)

A limitation of this part of the study, that is important to recognise, is that the results have to be interpreted on the assumption that the tape recorder or researchers' presence did not affect how the patients' communicated. It has already been recognised in this

study that this is an issue (Chapter 6 second study see section 6.4). The researcher found that when the tape recorder was switched off the patients generally became more forthcoming. Suddenly they were communicating much more freely and sometimes at great length. This highlights the downfall of tape recording interviews, with the potential loss of data against the disadvantage with decay bias commonly expressed when not recording interviews. In this study, the researcher noted down any relevant details as soon as possible afterwards on the interview guide used for those not willing to be tape recorded and incorporated them with the tape recorded data.

Travelling and carrying out interviews in the patient's homes was, from the researchers point of view valuable but very time consuming. The ratio of time spent travelling and exchanging pleasantries to collecting data was quite high. However, at the stage in the research was most definitely a worthwhile exercise in terms of the richness of data collection.

The use of telephone interviews in this research was also found to be very worthwhile. People appeared to feel more anonymised as they cannot be seen, and therefore, do not answer in the way in which they feel you wish them to answer but are more open.

The results have given quantifiable data into patient care issues surrounding the barium enema examination. It has been shown to be one of the most personally invasive examinations which has changed very little since its early development. It was intended to use physiological methods to monitor the anxiety levels (see section 8.3) and evaluate the use of different forms of information against a baseline control group of patients, and monitor patients attending for CT and MRI. However, it became increasingly obvious, as time progressed that while this would be a valuable area of research, it was unrealistic because of constraints of time, money and facilities and the implications of carrying this out in a busy clinical environment. Also, it became apparent that there is a deficit of published research of patients emotional responses and information in radiography examinations. It was felt that there was a need to evaluate the usefulness

from a patients perspective in decreasing the change in their anxiety levels by the provision of informative and sensory information. Also the potential to follow the examination from an holistic viewpoint and obtain a complete picture of the effect of the examination on the patient as a whole, before trying to develop sophisticated means of measurement, and distinguishing different modalities to image the large intestine. Therefore it was decided that a study of current patient feeling was a necessary starting point which could provide a baseline on which to develop simple interventions which could be evaluated. The results of this data can then be used as an integral part of the process of action research which is seen as a method lending itself to professions such as radiography. It does not look at radiographic practice, and it is not suggested that the framework would necessarily be acceptable for other radiographic examinations. The effectiveness of the information leaflet is simply evaluated in terms of reduction in anxiety in terms of how the patients feel, and does not evaluate the effect on the radiographic team.

This chapter will now discuss the research in the specific areas of direct relevance to the stated hypotheses.

10.2 Information

To investigate patients' feelings concerning the information they had received about the barium enema examination, patients' at various stages were asked whether they felt they had sufficient information. The data from the first two studies showed patients generally, indicating that they were unaware of what the procedure involved and what they were expected to do (see sections 5.5.2, 6.5.2). In order to formalise the implications of the data in the third study, the patients' were asked to indicate on a 100mm horizontal visual analogue scale whether they felt that they had had sufficient information. 83.6% of respondents felt that they did have sufficient information (see figure 8.11), however it has to be considered that the patients may not know any better

and consequently feel satisfied in their ignorance. It also has to be taken into consideration that some of the respondents had received the information leaflet designed specifically for informing them about the procedure. Further investigation showed that 95.2% of those who had received the leaflet felt that they had sufficient information, whilst 69.6% of those who received the standard hospital information felt that they had sufficient information. Therefore showing that those in the leaflet group had a greater feeling of having sufficient information.

Non parametric tests were carried out to test whether there was a significant difference in the respondents feelings about whether they had sufficient information between those that had received the standard hospital information and those that had received the information leaflet. The Mann Whitney U and Wilcoxon Rank sum W test gave a significance value of $p < 0.05$. This suggests that there is a difference between the form of information and whether respondents feel that they have sufficient information.

Analysis of variance was carried out to test for other influences on whether the respondents felt that they had sufficient information. No effect was demonstrated for single variables other than the form of information. 2 way effects were then tested, but these also have no effect. It can therefore be said that there is a stronger feeling of having sufficient information in those who received the leaflet designed for this study when compared with the standard hospital information.

Potential patients who took part in the evaluation of the computer programme showed knowledge gain about the examination procedure. Although the subjects were not actual patients and therefore did not undergo a barium enema examination, the usefulness of the tool in terms of providing information should be noted.

10.3 Anxiety

It was also hypothesised that patients' attending for barium enema experience anxiety. The data from the first two studies showed the majority of patients' expressing anxiety, or being worried or frightened. The third study approached this area of questioning using a 100mm horizontal visual analogue scale and asked the patients' to indicate their anxiety on both a normal day and on the day of the examination. The results showed 7.8% of respondents felt they were anxious on a normal day, however on the day of the examination 41% of the respondents felt that they were anxious. Mode and mean scores were 1.0 and 2.544 respectively for *feel normally* and 5.0 and 5.153 for *feel now*. This therefore crudely demonstrates that the respondents were considerably more anxious on the day of the examination. Frequencies of the results show 67.6% of respondents to be more anxious on the day of the examination than on a normal day. Figures 8.8 and 8.9 demonstrate visually the elevated anxiety on the day of the examination and show greater anxiety levels from female respondents.

Further investigations into each individuals' reasoning for anxiety is an area for consideration as it must not be assumed that all of the anxiety is due to fear of the examination itself due to lack of information. At this point no inferences will be made. Reference however must be made to an expressed fear of cancer and consequent dying by some patients in the preliminary phases of the research. It was the intention to address this area by means of keeping the patient properly informed via the information leaflet. However, it is recognised that the leaflet only addresses the examination and does not actually touch on the area of cancer. The reasoning for this was that it is not an area that is necessarily pertinent to every barium enema patient. Therefore it was not felt to be appropriate for the leaflet, and it was not thought to be suitable to question the patients on a sensitive area such as this in questionnaire format. This area will be discussed with reference to further work in the following chapter.

10.4 Information and Anxiety

The prediction that patients would rank anxiety levels higher when they had low levels of information was based on personal experience and preliminary background reading of patients experiences, (Ferguson, 1988; Howard, 1992; and Steine, 1993). The results from the visual analogue scales on anxiety showed 67.6% of the patients to be more anxious on the day of the examination. Of those who felt that they had insufficient information, 63.8% were classed as anxious before the barium enema compared to 31.2% of those who felt that they had sufficient information, showing the prediction to be a reasonable one.

For analysis of anxiety a new group 'change' was developed from the difference in scores of the *feel now* and *feel normally* groups. Due to the distribution of the data in this group, the square root was taken in an effort to make the data follow a normal distribution for analysis. A general factorial ANOVA was then undertaken to see which variables, if any, had an effect on the change in anxiety levels before a barium enema examination.

Follow up tests were carried out on the variables that were shown to affect anxiety levels to further locate the effects. It showed the leaflet group to have lower anxiety levels, that males had less change in their anxiety levels than females, which correlates with the work of Wilson- Barnett (1978), and that the over 40 year old age group showed a lower change in anxiety levels. This latter result conflicts with those of Robinson and Demuth (1985) who reported that the greatest effects were experienced by the elderly.

Bowel preparation of picolax was shown to produce a slightly greater anxiety change in the hospital information group, but the 'other' bowel preparation was shown to produce higher levels of anxiety and greater changes in anxiety. Both bowel preparations showed higher anxiety scores in females, which is consistent with earlier findings on anxiety scoring. (See tables 8.12, A15.3, A15.4 and A15.4.1)

Non parametric tests were employed to test the significance of the information leaflet on the anxiety levels. Statistical significance of these results was tested using Mann Whitney U, a critical value of $p < 0.05$ was obtained showing that there is a statistical significance between the two variables. Thus, indicating that there is an inverse relationship between information and anxiety, such that increasing information results in decreasing anxiety. The sample size was deemed sufficiently large enough that the effect size would be adequate such that the results can be said to be clinically significant. To verify this further the mean rank scores were calculated to test the significance, the results showed that there was a difference, thus suggesting clinical significance. These results are consistent with the suggestions of Lewis (1986) that 'taking a couple of minutes to explain the sensations the patient will feel, in addition to the procedure, will go a long way to reduce the patients' stress'.

The overall results concerning information were conflicting. There has been a great effort to promote the need to inform patients and, although it is general practitioners and consultants in the hospital trusts that send patients for the examination, it is the x-ray department which appears to be the provider of information about the examination. The radiographers working within the rooms were generally found to give full and thorough explanations however, although welcome, these are too late to alleviate the pre-examination anxiety experienced by some of the patients.

The results suggest that although patients state that they have sufficient information, they feel more at ease after receiving a detailed booklet explaining the sensation as well as general simple information. It indicates that the information sheets produced by the hospitals have been planned on specialist radiography knowledge rather than on hard researched data. This finding correlates with Hartfield and Cason (1981) who found that 'subjects who received sensation information reported less anxiety than subjects who received no information or procedural information'. The benefit of this research over that of Hartfield and Cason is that the information was given via leaflet which is fairly easily distributable to a wide section of people, their research entailed giving taped

information to the subjects, which would be difficult to reproduce on a wide scale. Apart from the costs of printing, this leaflet would be easy to employ across the country.

The overall results concerning anxiety were as hypothesised. Despite the emphasis given over the last decade to the importance of putting the patients needs first and letting them make an informed choice, little seems to have been changed in practice to increase patient knowledge and awareness concerning the barium enema examination. This study clearly showed raised levels of anxiety on the day of the barium enema examination (see Fig 8.6 & 8.7). The issue in this research was whether the change in anxiety levels from the norm could be decreased by informing the patients about the procedure on both an informative and sensory level, with easily manageable text in a format that was eye catching. As already discussed, the information had a positive effect in reducing the change in patients anxiety. However, it must be recognised that patients were still exhibiting raised levels of anxiety and other avenues quite evidently need exploration in the future. An area that has been highlighted is that of the 'fear of cancer', which must be taken into consideration as there is a great unspoken fear among patients that they will be given a life sentence.

10.5 Physical and Psychological after effects

The after effects that are directly attributable to the barium enema that patients experience once they have left the hospital, and are no longer classed as a patient of the x-ray department, were investigated. This was in an attempt to analyse the professional radiographers boundaries, and the way in which diagnostic radiography is unique in the caring professions. (As the patient is the diagnostic radiographers' responsibility for only a very short time, and only in a very specific way.) For example nurses, will assess patients that are about to leave the ward and will arrange for a district nurse to visit if they feel that it is necessary or beneficial to the patient. Occupational therapists help people to adapt to their disability or find aids to help them to carry out their normal daily

activities. But radiographers, only deal with the specific x-ray procedure, and do not follow up patients' to check on their progress following the radiological intervention.

Some patients' reported quite devastating personal effects that they would directly associate with their barium enema examination. The number of patients' involved in these areas of the research however, were not sufficient to allow statistical significance to be tested. Nevertheless, the implications of the data gathered should be given consideration for the value of its' depth. The experiences that were highlighted by the patients' warrant further attention and therefore will be discussed in the following chapter.

10.6 Aftercare Information

The area of aftercare has been highlighted as an area for concern and further investigation. Aftercare information not being given or being remembered incorrectly was highlighted in the first and second studies. Patients were questioned to this effect in the second questionnaire which was completed immediately after they had had their barium enema.

The responses from the questionnaire indicate that the majority of patients received the correct aftercare instructions. Firstly 77.4% of respondents indicated that they had received aftercare information with 19.3% indicating that they had not. This already warrants concern however, 3.5% of the respondents who indicated that they had received aftercare instructions when asked to indicate the content, detailed instructions from the preparation sheet. This leads to speculation that these patients did not receive the aftercare information either. However it must be considered that patients are anxious and also eager to leave once the examination is over. But, for most it is the last contact with the x-ray department and it can be seen that in approximately 20% of patients the information is not being acquired. This finding is re-iterated in the follow-up interviews.

Radiographers and nurses in the department are very aware of the importance of this information and it is not envisaged by the researcher that the instructions are not being given out to the patient. Consideration must also be made that aftercare instructions as per local guidelines are given verbally. Taking into account research such as that by Russel et al (1979) into general practitioners' advice against smoking and the lack of retention of information and also the research by Kerrigan et al (1993), which suggests that 'at times of stress many patients do not absorb verbal information', the researcher feels investigation into providing written aftercare instructions to be given after the examination an area for urgent attention. This study endeavoured to inform the patient before the examination, taking into account the study by Corney et al (1992) which stated that patients would have liked more information on after effects, the findings of the questionnaire showed no effect on the patients recall of aftercare information.

Further analysis was carried out to investigate whether there was an effect on the responses to the question, 'Did you receive aftercare instructions ?' in the respondents who had received the information booklet.

No effect was demonstrated on the aftercare information remembered by the patients by them having the information leaflet.

10.7 Implications of this study

Previous studies, DeCann and Gratton, (1984), DeCann, (1990) and Paterson, (1991), have focused on what professionals do during an x-ray examination on a patient care level. This study does not doubt the skill and effectiveness of the radiographers in looking after patients in the x-ray room. However, it takes onboard the forever recurring statement that 'the more anxious a patient is, the more difficult the examination is'. This is a phrase that is acknowledged by radiographers, nurses and radiologists alike. This study is therefore concerned with dealing with the patients anxiety before they get to the

x-ray department and after they leave. The usefulness of informing patients via leaflets and computer assisted learning packages has been demonstrated. The benefit of these methods of information giving is the potential for them to be re-visited by the patient as often as they require. Radiography, by focusing on the x-ray room care, can be said to be compartmentalising patient care, this study is endeavouring to show that radiographers have a patient care role to fulfil outside the x-ray department, both before and after an examination such as a barium enema. Radiographers have in recent years been developing and extending their role. There has been the appointment of specialist radiographers in some hospitals for a number of years and Dowsett and Frost (1992), state:

> 'It became clear that a logical extension of the role of the specialist radiographer was to take on barium enema examinations'
>
> (Dowsett and Frost, 1992)

If this type of specialism continues in radiography, it would also seem logical that the above mentioned patient care role could fall in line as a further role extension area. This could be seen to be analogous to the nurses who get patients who are coming in for angiography in to the hospital for checks and to explain procedures to them before the actual day of the examination. It is suggested that, there could be a role for a radiographer to prepare and follow up the patients who were coming into the x-ray department for examinations such as barium enemas. Although this may be interpreted by some radiographers as a nursing type of role, it is suggested by the researcher that in the future, training for para medical professions such as radiography and nursing will have the same basis. There is the possibility that all in the para medical fields will be trained to be able to carry out the same roles. Within the holistic framework, will be responsible for a patients welfare and thus follow them through their hospital visit carrying out the necessary procedures to as great an extent as possible.

Radiography is historically a technical profession, originating in this country from engineers, this therefore explains that much of the development in the early years has been on a technical basis.

With continuing professional development and role development in the forefront of every radiographers mind (COR, 1996), maybe this research is indicating that time should be taken by educators to develop courses and time should be taken by departments to develop protocols for changing practice.

Any two people undergoing exactly the same procedure under the same circumstances can and more than likely will have two completely different experiences. This is a well known fact in all aspects of life, not simply radiography. In a series of books entitled 'Your Operation' published in 1994 the preface states that:

> 'One feeling that is common to many (patients having undergone an operation) is that things might have been easier if they had a better idea of what to expect...'
>
> (Smith and Leaper, 1994)

The Patients Charter has advocated the need of patients to be informed about the examinations they will be undergoing so that they have a choice. However, if we do not have set standards of practice outlined then the quality of care given to patients will depend on which hospital they visit and who they see. There is a need for greater focusing on care in radiography, theory development is paramount as the resultant effect will lead to the development of models of care that are laid out for the whole profession. Care must be taken, and the issue of standardisation in training needs to be addressed, as there is no longer one governing body as in the Diploma of the College of Radiographers (DCR) which assured that all training was uniform throughout the country. With the training now in University departments there are different course structures and contents and different awarding bodies and pass levels. This has implications for competence, which consequently leads to the implication of differences in care.

As the radiography profession continues to develop at an astounding rate, care and attention needs to be paid to the nuts and bolts part of the job itself. There is no point in developing and extending the role of the radiographer if the very job that the initial training set one up for diminishes out of existence because radiographers are losing sight of the very heart of their job. Radiography is essentially about caring for patients and it is this that we should build on when developing our role, it would be foolish to give away the essence that made radiographers professionals and not simply technicians.

There is a great need for radiography to be addressed as a holistic profession. Boundaries need to be carefully established where the care of patients by radiographers begins and ends, once this has been ascertained then development of the caring structure needs careful consideration. It has been evident throughout this research that the needs of the patient are not being fully addressed in the diagnostic imaging department. There are holes in our practice, which leaves patients relying on those out of the profession to give them the care that should have been forthcoming from the imaging department.

Patients should not be attending for appointments frightened because they do not know what is going to happen to them. Likewise, they should not be sent home without knowing the possible effects of the procedure that has been carried out on them. Radiographers must take care also not to have their job taken from under their noses, as Pieper (1992) in her closing remarks states 'Since ET nurses work with patients who have GI disorders they are in an ideal position to develop and conduct research studies on diagnostic procedures'. If radiographers do not develop and fill the gap then someone else will ! The general public is becoming more and more informed and aware of their rights, and it will be in the best interests of the profession and diagnostic imaging departments to keep the patients informed and given clear, comprehensive instructions.

10.8 Implications for Clinical practice

Implications of the results into clinical applications must lead to further thought on a professional level, with considerations as to patient satisfaction and the quality of care possible with the ultimate effect being on a patient management level.

11. Conclusion and Recommendations for Further Work

This thesis has broadly covered emotional responses connected with the barium enema examination, and focused on the effect of information on the levels of anxiety experienced by patients. It has been established through interviews and questionnaires that patients attending for barium enema are anxious. However, it cannot be concluded that this is totally due to a lack of information as there have been shown to be many confounding reasons, such as fear of cancer, which is an issue in itself which needs addressing. It was nevertheless found that patients who had received the information leaflet specifically designed for this study had statistically significant reduced levels of anxiety. Furthermore, patients receiving the leaflet had a stronger feeling of having sufficient information than those who received only the standard hospital information. It is thus concluded that increased knowledge of the barium enema procedure reduces the anxiety of the patient.

A very worrying outcome of this research concerns the aftercare information, which was highlighted in both the interviews and questionnaires. Approximately 20% of the questionnaire respondents stated that they did not receive any aftercare information. Some of those who stated that they did know the aftercare information, detailed preparation instructions when asked to state the content of the aftercare instructions. Although the aftercare instructions were included in the information leaflet, this appeared to have no effect on the recall of the instructions after the barium enema. It can be concluded from this that informing patients about aftercare prior to the examination is not beneficial and that there is a great need to address the area of aftercare further.

Some degree of physical and psychological problems that were directly attributable to the barium enema examination were highlighted in interviews with patients after the examination. These after effects cannot be classed as significant, however this should be treated as a great area of concern and should not be dismissed as insignificant. Although numbers have been small, many cases have shown the effects to be large, and the code

of professional conduct (1994) in its chapter concerning relationships with, and responsibilities to, patients' states:

> 'Radiographers must have regard to the physical and psychological needs of patients and their relatives and the effects on them of the hospital environment'
>
> (College of Radiographers, 1994)

On a wider scale the research has acknowledged that the radiography profession has recently taken major steps into a new era, and that the profession is still under development. There has been great change in the undergraduate education for student radiographers and the profession itself is maturing at a rapid rate, with radiographers changing their role from that which was traditionally recognised, to take on tasks conventionally seen as those of a radiologist. At the same time the Society and College of Radiographers have drawn the profession down the continuing professional development (CPD) route. This opens up avenues for further training and specialisation for radiographers. This research has unearthed an area of possible further expansion (see section 10.7) for the radiographers role which may be taken on by those in the profession who choose to train to carry out barium enemas.

It is recognised that radiography is a changing profession and this research has endeavoured to highlight the need for radiographers to develop their skills within their own traditional areas and look at the emotional responses that some of the procedures they perform induce. It shows that there is room for expansion in their practice as well as moving into and taking on radiological roles. There is a great need to critically evaluate radiographic practice so that radiographers will be aware of the requirements of the most important aspect of our job - the patients. If radiographers develop themselves in the patient care side as well as the technical side then they will result in providing a greater quality of care and patient satisfaction in the future. This is in line with the code of professional conduct which states in sections on respecting patients' rights and advocacy respectively:

'Radiographers should ensure that patients are provided with information about their examination or treatment prior to, during and after the examination or treatment. They should ensure that patients leave the department understanding the appropriate follow-up procedure'

'Radiographers must, by virtue of their professional abilities, empower and enable patients such that they may make their own decisions about the nature and progress of their examination or treatment'

(College of Radiographers, 1994)

The Government white paper (Department of Health, 1989) 'Working for patients' and the Patients Charter (Department of Health, 1991) have recognised the need of 'putting the patient first'. The radiography profession needs to address the fact that radiological procedures cause anxiety in patients (Wilson-Barnett in Johnston and Wallace,1990) and evaluate how these problems can be alleviated. This needs to be established through investigations involving patients, and as a caring profession radiography should be looking further into the area of holistic care. DeCann (1994) suggests that actually asking the patients themselves is not the best way of finding out about their perceptions of the levels of care. The researcher believes that it is necessary to deal with the individual that is involved. Studies such as DeCann (1994), Paterson (1991) and, Crawley (1992) have looked at patient care issues from a professionals practice of observation. It is felt that there is a great need to look holistically at radiography and also to give the patients their 'right to a voice' and hear and listen to what they have to say. As quite rightly and relevantly pointed out by DeCann (1994) it is difficult to conclude what people understand and comprehend. It is seen by the author, however, as part of the radiographers job to 'get stuck in' and find out. The question is posed 'If we do not ask the patients' themselves how can we possibly expect to know?'. It has been recognised throughout this research that each of us is an individual and needs to be treated as such. All good radiographers are aware of this in their work everyday, however radiographers need to know from the patient themself what and how they feel and what they need. It would be impertinent to suggest that radiographers know or can

observe what the patient feels simply because they are healthcare professionals. We need to question and investigate at each particular level of the work we do, this includes observational studies, but we have to 'get our hands dirty' and ask the people that it really concerns, and that means we have to talk to the patients. Although each person is an individual and has different levels of education and understanding, what we are looking for are trends. We should have recognised that we need to cater for and offer a quality service to all patients whatever their level of comprehension. It is our duty to ensure that each individual is cared and catered for. Although this research has not been easy and has been very time consuming to carry out, it is felt that it opens the doors to further work being carried out using patients more directly. Afterall, it is for them that we are providing the service. It is felt that the results of this research show the need to make an effort to put the 'healthcare professional' and 'hospital' aside and go into the patients' environment to allow them to feel comfortable and be able to speak frankly. The results from the interviews show the different aspects of the experience that were poignant at specific times to the patient and this should be recognised as valuable data and a very worthwhile form of data collection. The interviews described in this thesis should be considered as a useful starting point for future research into patient centred radiographic based research.

The barium enema has thus been shown to be an examination that may affect the patient emotionally from the very moment that their appointment is received, to well after the examination itself is complete. Informing the patient with procedural and sensation information has been shown to be beneficial to their anxiety level. This research is felt to have touched on and unearthed many avenues that need far greater exploration and quantifying. It is hoped that this study will be used as a basis for development and further research.

11.1 Recommendations for Further Work - Background

This research has explored the barium enema examination holistically from the patients perspective and evaluated a specially designed information leaflet for reducing patients anxiety. The results of this research provide important information concerning communication between hospitals and patients. There is a need to further follow-up the effectiveness for the patient of information given regarding x-ray examinations, so that the future will see more comprehensive standards of care laid out by Trusts which would include a minimum level for informing patients to raise quality standards and patient satisfaction.

11.2 Information leaflet

Part of this research has evaluated a specially designed information leaflet for reducing barium enema patients anxiety. The results have shown that the horizontal non-graduated visual analogue scale used by the researcher has comparable sensitivity to Spielbergers STAI for measuring the state and trait anxiety of barium enema patients prior to the examination. It is recommended that this be used for further investigations of this type in radiography. It is suggested that it is simpler, less time consuming and less anxiety-provoking for the patients and that the data in this context is as reliable as that from the STAI. It is also suggested that it can be used to compare anxiety levels and changes in patients attending for other diagnostic x-ray examinations with those of the barium enema examination. It is also suggested that this tool could be used across other disciplines for this type of data collection.

This study has been limited to North Wales and Shropshire. It is recommended that trials with the information leaflet should be carried out in x-ray departments across the United Kingdom, to test the efficacy of the leaflet, the validity of this study and also in an effort to set national standards.

11.3 Barium Edutainment

A section of the research evaluated the content and usability of a computer based multimedia programme. This was developed to inform patients about the barium enema examination in an educational and entertainment type way. The programme was tested on 'potential' patients due to its innovative nature. The results showed that it was a useful and usable tool and that there was good knowledge gain. The programme also scored above state of the art commercial software for all categories of usability. It is suggested, following these results, that research should be carried out testing this programme with actual barium enema patients.

11.4 Fear of Cancer

Some of the interviews conducted highlighted that a proportion of the anxiety that some patients were experiencing was due to them fearing that the examination would show that they had cancer. The best way of addressing the issue of anxiety related to fear of cancer needs further investigation. Subsequent studies could ask patients specifically if their anxiety was due to fearing that the barium enema would show that they had cancer. This was not asked directly in this study for fear of making patients' more anxious by introducing the thought to them. For many of them it is hypothesised that this will not have been something that they have considered. It is suggested that if this area is to be explored, it should be done so via face to face interviews and broached very sensitively, or teased out of the patients by carefully worded questions. The intention being, that it would be the patient that would introduce the subject rather than the researcher. If further work shows many patients to be anxious due to a fear of cancer, then perhaps a new addition to the information leaflet could be made to discuss briefly the common things looked for with the examination. It must be recognised that this is a very sensitive area which needs to be treated very carefully so as not to be raising patients anxiety.

11.5 Language

This study in the end only concentrated on those patients who could speak and read English, despite efforts of the researcher to adhere to the bilingual policy of the hospitals of North Wales. Due to the validity of the questionnaires once translated, the ethics committees waived the bilingual policy and the Welsh side of the leaflet and questionnaires was thus abandoned. Questionnaires were still made available as were Welsh translations of the information leaflet if a Welsh speaker preferred, however the Welsh questionnaires if completed had to be discarded. In practice no Welsh translations of the information booklet were requested and only one Welsh version of the questionnaire was requested. If this study was to be effective nationally then there would be the need for translation into various languages for the benefit to be felt by the population as a whole. Also, the most concern about validity was voiced about the translation of Spielbergers STAI. Due to the results from the questionnaires, it has been suggested that the horizontal visual analogue scales are quite adequate for assessing the anxiety of the patients for a study of this nature, this therefore would suggest that the use of translations would be possible.

11.6 Children

Children were omitted from this study, however their needs must also be considered as it is noticeable that children show greater levels of anxiety than adults in the x-ray department. Information could be provided for children in the form of a video which they could come in and see prior to the examination, or a book with pictures of the equipment and room could be provided. Alternatively, information could be supplied to the parent about the examination and how to go about explaining it to their child in the best way to allay fears. It is felt that it is important to cater for children and is suggested as an area that needs attention.

11.7 Aftercare

A very worrying outcome of this research concerns the aftercare information. Aftercare information is given verbally in all of the participating hospitals. From the results of this research, serious consideration needs to be given to this point. It is suggested that an investigation into the benefit of supplying aftercare information sheets to the patients once the examination has been completed, is an area for urgent attention.

11.8 Preparation information

Data collected from the interviews highlighted that many patients had problems understanding the preparatory dietary instructions, and as a consequence some had starved themselves for the duration of the preparation, which is not an ideal situation. The suggestion here is that further work could focus on this area and produce a standard diet sheet that could be given to barium enema patients, either with set meals for the day or with an exact list of foods that are allowed.

11.9 Holistic perspective

This research has endeavoured to investigate patients experiences of the barium enema from a holistic patient viewpoint, this has highlighted (in what must be recognised as small numbers) both physical and psychological problems that are experienced by patients after they leave the x-ray department and hospital. Holism is an area that although is becoming more widely regarded, is relatively neglected at this point from a patients perspective in the x-ray department. Barium enema patients all take home some effect of the barium enema. The reminder ranges from; the white barium sulphate that has been left in the bowel after the examination that will have to be evacuated, (which can take some time and be embarrassingly unflushable) to great physical pain or

psychological disturbance. There is a quite obvious platform here (with all patients being effected in some way) for a radiographers' role to extend to follow up these patients and thereby make the care of the patient more holistic. It is suggested that there is great scope for further work in this area, not only with respect to the barium enema examination but for all radiographic procedures. Everything that happens in our lives affects us in some way and it would be seem pertinent to investigate the impact of diagnostic radiography on the general public. This would be especially interesting in light of the increasing awareness not only of patients rights but also of patients awareness in radiation protection due to media coverage.

11.10 Alternative Modalities

Further investigation is also recommended in the area of alternative examinations such as CT, MRI and ultrasound. There are continuing to be great developments in this area, and it is felt that this is very important to follow closely. It is expected that in the future the barium enema examination will be virtually redundant due to the progress being made in these modalities and the fact that the procedure will be more acceptable to the patient. However, the key findings of this research should be transferable to the alternative modalities.

11.11 Summary

This research has covered a very large and important topic, namely information giving to patients over a very small area, that being a single radiographic examination. It is recommended that as well as being carried out on a wider scale, this type of study should be replicated on other radiographic examinations.

The research has enabled the strongest (but not the only) source of patient anxiety to be identified, and has highlighted several other important issues. The strongest source of patient anxiety, that of a lack of sufficient information, was addressed. Important issues identified from this were the critical nature of the source and type of information and also that readability and comprehension are essential elements. The area of aftercare is also a serious issue with the research showing this to appear to be either lacking or not understood. On another level, the apparent validity of the VAS scoring system has been established as a replacement for the more complex STAI questionnaire.

Even if the barium enema examination ceases to be the gold standard procedure for large intestine investigation, the findings of this research are transferable to other aspects of care especially within the radiography department. The results of this research could make a difference to clinical practice now and it is hoped that the methodological findings will influence future research in this area.

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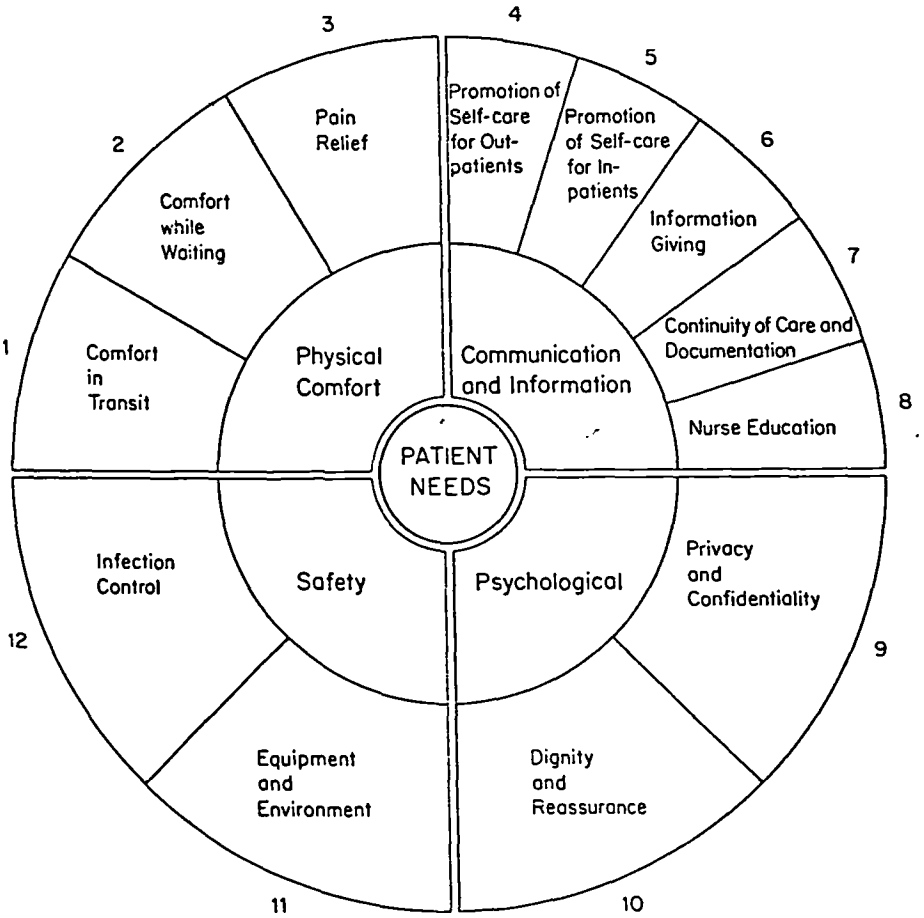
Appendix 1

Model of Nursing Care



Appendix 2

GLAN Clwyd
DISTRICT GENERAL HOSPITAL
YSBYTY CYFFREDINOL DOSBARTH

COMMITTEE SERVICES OFFICE

Ms. Le Masurier,
Department of Radiography
Education,
Wrexham Technology Park,
Croesnewydd Road,
Wrexham, Clwyd.
LL13 7YP.

Ein cyf/Our ref: JW
Eich cyf/Your ref:
Dyddiad/Date July 18, 1995
Wrth ffonio gofynnwch am/If telephoning ask for
Mrs Julie Whitmore
Est/Ext. No. 4132

Dear Ms. Le Masurier,

Re: Information, emotional responses and the Barium Enema examination

Thank you for your letter and documentation regarding the above mentioned research proposal.

I note from your letter that you will be out of the Country when our next meeting is due to take place on the 3rd August and will therefore be unable to attend the meeting to present this study. I will however submit the protocol for approval in your absence to avoid unnecessary delay.

Providing members are satisfied with the proposal a letter of formal ethical approval will be sent shortly after the August meeting. Should any difficulties arise however, you will be contacted by letter, this will then give you the opportunity of attending the meeting on the 7th September to answer members queries and produce any necessary documentation.

I hope this information is useful to you, but if you have any queries before your departure date on the 24th please contact me again.

Yours sincerely,

J.A. Whitmore

Mrs. Julie Whitmore,
Committee Services
Secretary

YSBYTY GLAN CLWYD HOSPITAL, RHYL, CLWYD LL18 5UJ FFÔN/TEL: (01745) 583910 FFACS/FAX: (01745) 583143
An NHS Trust / Ymddiriedolaeth GIG
NHS CYMRU WALES

GLAN CLWYD
DISTRICT GENERAL HOSPITAL
YSBYTY CYFFREDINOL DOSBARTH

COMMITTEE SERVICES OFFICE

Ms. S. Le Masurier,
Department of Radiography Education,
Archimedes Centre,
Wrexham Technology Park,
Croesnewydd Road,
Wrexham, Clwyd.
LL13 7YP.

Ein cyf/Our ref: RJM/JW
Eich cyf/Your ref:
Dyddiad/Date August 10, 1995
Wrth ffonio gofynnwch am/If telephoning ask for
Mrs Julie Whitmore
Est/Ext. No. 4132

Dear Ms. Le Masurier,

Information, emotional responses and the Barium Enema examination

Thank you for sending this proposal to us and I am pleased to be able to confirm full ethical approval for this study to go ahead.

However, two issues were raised by the Committee which we would be grateful if you could address. Firstly, that of patient confidentiality. You mention in the design of the study that questionnaires will be coded so that you can tell whether or not someone has been given the extra and special information so that you can look at their responses to the questionnaire. We are anxious that this coding should just be related to whether or not they receive this information and should not be coding that would enable you to obtain information on their names and addresses, as then of course it would be incorrect to say to an individual that the questionnaires were anonymous when you have the means of determining exactly who filled the questionnaires in.

Secondly, we felt in the questionnaire that there ought to be some clear statement about whether or not people have read and understood any of the information that they have been sent by the X-Ray Department before one can attribute any effect on anxiety to reading special information which in the event the individual may not have read. This is likely to be particularly the case for frail, elderly people referred for barium enema, who may well be unable to read the print that they are sent, or who may have visual impairment.

Thirdly, there were some typographical errors in the research protocol in relation to the spelling of the word Barium and also I wondered if in your letter of introduction it might be more appropriate to say that as part of your research you have chosen to look at the knowledge and anxiety levels of patients attending for barium enema, rather than using the word information.

continued ...

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NHS CYMRU WALES

The Committee also wondered whether for Question 8 & 9 on the initial questionnaire you really need to use line crossing type of approach, as this is unlikely to derive data that can be handled even semi quantitatively and perhaps it might be easier to ask them to again put a number on their feelings, much like you were using in the state trait anxiety questionnaire. A further point was made that it is likely that patients anxiety may in some way reflect their own fears about the illness that they believe they may have and that if somebody has given them strong indications that they may have a serious illness, then perhaps they are going to be more anxious than somebody who is led to believe that their barium enema is unlikely to reveal anything of serious import. I do not know how this could be controlled for in your study but I think it is worth giving it some thought.

Finally, in view of the large numbers of barium enema requests that are generated in a single District General Hospital we wondered why you needed to approach so many hospitals in order to get your study population as one of these hospitals alone will undoubtedly generate a considerable number of barium enema requests in a one year period, well in excess of the size of the group that you need to recruit.

I look forward to hearing your response to these points.

Best Wishes.

Yours sincerely,

Dr. R. J. Meara,
Secretary,
Clwyd North Research
Ethics Committee

GLAN CLWYD
DISTRICT GENERAL HOSPITAL
YSBYTY CYFFREDINOL DOSBARTH

COMMITTEE SERVICES OFFICE

Miss S. B. Le Masurier,
Department of Radiography Education,
Archimedes Centre,
Wrexham Technology Park,
Croesnewydd Road,
Wrexham, Clwyd. LL13 7YP.

Ein cyf/Our ref: RJM/JW
Eich cyf/Your ref:
Dyddiad/Date October 18, 1995
Wrth ffonio gofynnwch am/If telephoning ask for
Mrs Julie Whitmore
Est/Ext. No. 4132

Dear Miss. Le Masurier,

Re: Information, emotional responses and the Barium Enema examination

Thank you for your recent letter. Your responses have been duly considered by the Ethics Committee and we are happy for this study to proceed.

We would however, require a new protocol which was free from typographical errors and also we would like the word "Information" to be substituted in the Information sheet to patients as as it stands it does not make any grammatical sense. I refer to the line " as part of my research I have chosen to look at information and anxiety levels ". The Committee felt that this should be altered to " as part of my research I have chosen to look at the knowledge and anxiety levels ". The Committee would also like to receive a copy of the special Information Pack that you have devised for patients in your intervention group so that we can retain these in our records.

We would be interested to check on the progress of the study and will be writing to you again in twelve months time.

Best Wishes.

Yours sincerely,

Dr. R. J. Meara,
Secretary,
Clwyd North Research Ethics Committee

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Clwyd
DISTRICT GENERAL HOSPITAL
YSBYTY CYFFREDINOL DOSBARTH

COMMITTEE SERVICES OFFICE

Miss Le. Masurier,
Department of Radiography
Education,
Wrexham Technology Park,
Wrexham,
Clwyd.

Ein cyf/Our ref: RJM/JW
Eich cyf/Your ref:
Dyddiad/Date November 8, 1995
Wrth ffonio gofynnwch am/If telephoning ask for
Mrs Julie Whitmore
Est/Ext. No. 4132

Dear Miss Le Masurier,

Re: Information, emotional responses and the Barium Enema examination

Thank you for sending us a revised protocol and a copy of your Information Booklet.

I will be writing to you again in twelve months time to enquire how the study has progressed and whether any problems have been encountered.

Best Wishes.

Yours sincerely,

Dr. R. J. Meara,
Secretary,
Clwyd North Research
Ethics Committee

YSBYTY GLAN CLWYD HOSPITAL, RHYL, CLWYD LL18 5UJ FFÔN/TEL: (01745) 583910 FFACS/FAX: (01745) 583143
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AWDURDOD IECHYD GWYNEDD HEALTH AUTHORITY

Coed Mawr,
Bangor,
Gwynedd LL57 4TP

Ffôn/Tel: Bangor (01248) 370025
Fax: Bangor (01248) 370214

Cyf/Your Ref

Cyf/Our Ref

GOFYNNWCH AM/PLEASE ASK FOR

.....Anne Wilkes .....

Est/Ext: ..... 2075 .....

21 July 1995

Ms Sue Le Masurier
The Department of Radiography Education
University of Wales
Wrexham Technology Park
Croesnewydd Road
WREXHAM
LL13 7YP

Dear Ms Le Masurier

Study: **Information, emotional responses and the Barium Enema examination**

Your submission to the Gwynedd Research Ethics Committee is acknowledged. As explained on the telephone it is necessary for the applicant to attend the meeting at a given time. In view of the fact that you will be out of the country this will be submitted to the meeting scheduled for the 21 September 1995. Can you arrange to attend in the Board Room at the Gwynedd Health Commission Offices, Coed Mawr, Bangor on Thursday 21 September 1995 at 6.00 pm. to speak to your application. Your Course Supervisor is also invited to attend if you so wish.

A bilingual policy is in operation in Gwynedd. Can you please, therefore, arrange to submit a Welsh translation of your information sheet, covering letter and questionnaires; however, the Committee will not insist in the use of non statistically verified Welsh translation questionnaires.

If you have any queries I will be happy to advise you.

Yours sincerely

Anne Wilkes

ANNE WILKES (MRS)
SECRETARY
GWYNEDD RESEARCH ETHICS COMMITTEE

CC Dr David R Prichard2

AWDURDOD IECHYD GWYNEDD HEALTH AUTHORITY

Coed Mawr,
Bangor,
Gwynedd LL57 4TP

Ffôn/Tel.: Bangor (01248) 370025
Fax.: Bangor (01248) 370214

:h Cyf/Your Ref

ı Cyf/Our Ref:

GOFYNNWCH AM/PLEASE ASK FOR

..... Anne Wilkes

Est/Ext: 2075

26 February 1996

Ms Sue Le Masurier
The Department of Radiography Education
University of Wales
Wrexham Technology Park
Croesnewydd Road
WREXHAM
LL13 7YP

Dear Ms Le Masurier

Study: Information, emotional responses and the Barium Enema examination

Thank you for attending, with Mrs Culmer, the Gwynedd Research Ethics Committee meeting on the 22 February 1996. I am pleased to inform you that the study was approved.

I confirm that the Welsh translation of the questionnaire is not to be used.

The Committee suggested that you consider setting up focus groups from participants in the test, as a means of establishing how the information sheet could be further improved as a result of the study.

The Committee require a summary of the results of the study when it is completed.

Yours sincerely

D O EVANS
CHAIRMAN
GWYNEDD RESEARCH ETHICS COMMITTEE

cc Mrs P Culmer

NHS CYMRU WALES

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n (0978) 291100 Ffacs (0978)

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Ms Susan Le Masurier,
Department of Radiography Education,
(University of Wales, Bangor)
Archimedes Centre,
Wrexham Technology Park,
Croesnewydd Road,
Wrexham,
Clwyd LL13 7YP

3rd August, 1995

CLWYD SOUTH ETHICS COMMITTEE

Dear Ms Le Masurier,

RE: INFORMATION, EMOTIONAL RESPONSES AND THE BARIUM ENEMA EXAMINATION

The Clwyd South Ethics Committee considered the above project at its meeting on Wednesday 26th July 1995. It was noted that the additional Information Sheet was not included with the application. It was decided that approval should be given for the project to proceed, subject to the Secretary having sight of and approving the additional Information Sheet. I would be grateful if you would let me have a copy of this Information Sheet.

Yours sincerely,

P BILLINGS
Consultant Surgeon
Secretary - Clwyd South Ethics Committee

'SBYTY MAELOR WRECSAM
fordd Croesnewydd, Wrecsam, Clwyd LL13 7TD
fôn (0978) 291100 Ffacs (0978)

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Ms Susan Le Masurier,
Department of Radiography Education,
(University of Wales, Bangor),
Archimedes Centre,
Wrexham Technology Park,
Croesnewydd Road,
Wrexham,
Clwyd LL13 7YP

12th September 1995

CLWYD SOUTH ETHICS COMMITTEE

Dear Ms Le Masurier,

INFORMATION, EMOTIONAL RESPONSES AND THE BARIUM ENEMA EXAMINATION

Thank you for sending the Patient Information Sheet. This is satisfactory and hope your study goes well.

Yours sincerely,

P BILLINGS
Consultant Surgeon
Secretary - Clwyd South Ethics Committee

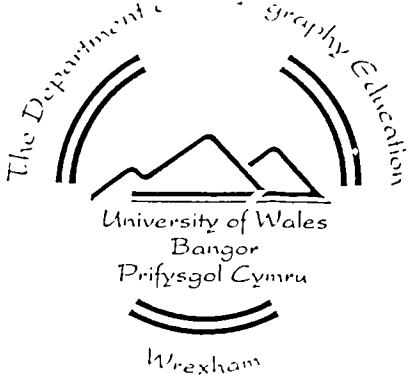
Appendix 3

TABLE A3.1 RAW RESPONSE DATA OF FIRST STUDY INTERVIEWS

identification	location	description	code
1	ygc	the laxative was very strong	3.3
1	ygc	what happens in the room	2.2
1	ygc	don't want too much information	2.1
1	ygc	don't like hospitals	1.1
1	ygc	leaflet would be good	7.1
1	ygc	correct aftercare	3.1
1	ygc	very anxious	1.1
1	ygc	it was ok	5.1
2	ygc	why did I have to get undressed	2.2
2	ygc	aftercare not remembered	3.2
2	ygc	it was horrible, I want to go home	5.3
2	ygc	diet info confusing	2.4
2	ygc	laxative was painful	3.3
2	ygc	feel anxious	1.1
2	ygc	info from friends	2.2
3	ygc	It was fine, not painful	5.1
3	ygc	where will the tube go	2.2
3	ygc	I didn't know what I was allowed to eat	2.4
3	ygc	anxious	1.1
3	ygc	correct aftercare	3.1
4	ygc	very uncomfortable, I want to get out	5.3
4	ygc	very anxious	1.1
4	ygc	info from books/friends	2.2
4	ygc	how far up will the tube go	2.2
4	ygc	If I'd known that was all, I wouldn't have worried	1.4
5	ygc	aggressive	1.1
5	ygc	aren't they just taking pictures of my tummy	2.2
5	ygc	feel very anxious	1.1
5	ygc	horrible, painful experience	5.3
5	ygc	confused/uninformed	2.2
6	ygc	diet info not enough	2.4
6	ygc	the laxative really took it out of me	3.3
6	ygc	It didn't hurt, better than I expected	5.2
6	ygc	worried about outcome	1.3
6	ygc	correct aftercare	3.1
7	ygc	diet info not enough	3.2
7	ygc	correct aftercare	3.1
7	ygc	how much barium will I have to drink	2.2
7	ygc	worried about results	1.3
7	ygc	not as bad as I thought it would be, ok	5.2
8	ygc	not sure what examination is about	2.2
8	ygc	correct aftercare	3.1
8	ygc	not sure what allowed to eat	2.4
8	ygc	anxious	1.1
8	ygc	better than I thought, felt ok	5.2
8	ygc	I wish they had explained it like it is, it's fine	1.4
9	ygc	wasn't nice, I'm sorry I have to go	5.3
9	ygc	has to be done	1.2
9	ygc	not anxious	1.2
10	ygc	correct aftercare	3.1
10	ygc	It was ok, I had no accidents & it didn't hurt	5.1
10	ygc	anxious about examination	1.1
10	ygc	worried as still going toilet alot	1.1
10	ygc	friend has had one said it was horrible	2.2
11	hw	info as a booklet would be good, easier to take	7.1
11	hw	diet confusing	2.4
11	hw	aftercare incorrect	3.2
11	hw	I wouldn't have got so worked up if I'd known, ok	1.4
11	hw	It was uncomfortable, but better than I expected	5.2
12	hw	no aftercare	3.2
12	hw	very anxious	1.1
12	hw	laxative fast acting, bit sore	3.3
12	hw	worried will go on the table	1.1

12	hw	I didn't like it, it felt awful	5.3
13	hw	no aftercare	3.2
13	hw	confused by diet sheet	2.4
13	hw	worried about what will be expected of her in	1.1
13	hw	very very anxious	1.1
14	hw	no aftercare	3.2
14	hw	laxative caused alot of pain in tummy	3.3
14	hw	worried about outcome	1.3
14	hw	don't understand what's going to happen	2.2
14	hw	info sheet frightened her	2.2
14	hw	I'm glad it's over but it was fine	5.2
14	hw	no aftercare	3.2
15	hw	feel anxious	1.1
15	hw	what happens	2.2
15	hw	no aftercare	3.2
15	hw	My tummy felt uncomfortable, but it wasn't	5.2
15	hw	I wish I had known it would be like that	1.4

Appendix 4



WANTED

Volunteers who have undergone a BARIUM ENEMA examination, and are prepared to be interviewed about their experiences.

PLEASE CONTACT: Sue Le Masurier
0978 316 205
The Department of Radiography Education
(University of Wales ,Bangor)
Wrexham Technology Park
Croesnewydd Road
Wrexham LL13 7YP

NB. No further x-ray examination required !

Appendix 5

BARIUM ENEMA EXPERIENCES AND FEELINGS

INTERVIEW QUESTIONS

1. How long ago did you have your Barium enema
2. Which hospital did you have it done
3. Who sent you for your Barium enema
4. Can you remember why you had it done
5. Did you know what was going to happen
6. Where did you get the information from
7. How did you feel about having it done
8. Can you tell me what happened
9. Is there anything that you wished you had known about
10. Do you feel that you worried unnecessarily about anything
11. Was it a better or worse experience than you expected
12. Did anybody give you any instructions after the examination
13. Did anybody check that you were ok before you left
14. Have you had any physical after effects which you could attribute DIRECTLY to the Barium enema
15. Have you had any psychological after effects which you could attribute DIRECTLY to the Barium enema
16. Would you have it done again

Appendix 6

TABLE A6.1 RAW RESPONSE DATA OF SECOND STUDY INTERVIEWS

identification	poster/magazine	description	code
1	p	I was very constipated afterwards	3.4
1	p	I would have it done again	6.2
1	p	the information was not very clear	2.2
1	p	I was confused about the dietary instructions	2.4
1	p	No-one checked on me before I left the hospital	4.4
1	p	It was better than I expected	5.2
1	p	I wanted to know what was wrong with me	1.2
2	p	No-one checked on me before I went home	4.4
2	p	I wasn't given any eating instructions	3.2
2	p	It wasn't how I expected it, the info wasn't clear	2.2
2	p	I had windy stomach pains after	3.4
2	p	It wasn't as bad as I'd expected	5.2
2	p	I was concerned about what was the matter	1.3
2	p	I was worried about the results	1.3
3	p	I had hardly any information	2.2
3	p	did not tell me what they were doing to me	4.2
3	p	staff were brusque	4.2
3	p	I was given no aftercare instructions	3.2
3	p	the staff were not very caring	4.2
3	p	I felt very alone	4.2
3	p	would have been nice to know what was being	4.2
3	p	no-one explained what was happening	4.2
3	p	It was worse then I thought	4.4
4	p	I had it a while ago but I can remember it vividly	5.3
4	p	no-one thought about me I was like a piece of	4.2
4	p	After taking the laxative I collapsed	3.3
4	p	I was told i was having a barium enema that's all	2.2
4	p	I was given stark instructions	4.2
4	p	no-one explained what was going to be done	4.2
4	p	I was very frightened	1.1
4	p	It was worse than my wildest dream	5.3
4	p	I had to go to bed with the stomach pain	3.4
4	p	I thought they'd done something awful to me	3.4
4	p	I called the doctor out	3.4
4	p	I have been diagnosed as suffering from PTSD	3.5
5	p	I didn't like taking all my clothes off ??? why???	2.2
5	p	not much exam info	2.2
5	p	It was better than I expected	5.2
5	p	good prep info	2.3
5	p	They told me to drink lots and eat normally	3.1
5	p	I didn't have any problems afterwards	3.6
5	p	I was anxious about having it	1.1
5	p	exam explained in room before it happened	4.1
6	p	the prep info was clear	2.3
6	p	I'd have it done again	6.1
6	p	I had a bit of wind that's all, nothing bad	3.4
6	p	I was anxious about what was going to be done	1.1
6	p	the staff were good in the room	4.1
6	p	I was told to eat and drink normally	3.1
6	p	it was better then I thought	5.2
6	p	I wasn't told what the exam involved	2.2
7	p	they were very nice to me when it was happening	4.1
7	p	they told me to drink more than normal and to	3.1
7	p	I was worried about how long I'd be in there	2.2
7	p	I was frightened it would hurt me	1.1
7	p	I was supnsed to have to take my clothes off	2.2
7	p	I had a headache and was constipated after	3.4
7	p	It was better than I thought- it didn't hurt	5.2
7	p	I didn't know what was involved	2.2
8	p	they explained everything in the room	4.1
8	p	everyone was really kind	4.1
8	p	I didn't understand what it involved	2.2
8	p	I was very anxious	1.1

8	p	I'd have it done again	6.1
8	p	I had no problems after	3.6
8	p	they told me to drink extra to normal after	3.1
8	p	I was frightened I had cancer	1.5
9	p	I wasn't worried	1.2
9	p	I just went home when it was over, no-one	4.3
9	p	the staff were really caring	4.1
9	p	I wanted to know what was wrong with me	1.2
9	p	I trusted the doctor, you have to	1.2
9	p	It was just as I expected, ok	5.1
9	p	I had no problems after	3.6
10	p	I was told it would hurt	2.2
10	p	I felt like I wasn't a person	4 2
10	p	they shouted at me in the room	4 2
10	p	they told me to go to the toilet then go	4.3
10	p	I felt I was being treated like I was stupid	4.2
10	p	I felt like a piece of dirt	4 2
10	p	they just told me to turn over and lie still	4.2
10	p	they could have told me what was happening	4.2
10	p	the info from the hospital didn't make sense	2.2
10	p	She said it was horrible	2.2
10	p	I knew what it was going to be like from my friend	2.2
10	p	I had a bad stomach after	3.4
10	p	It was worse than I expected	5.3
10	p	I'm very stressed, I'd never go back there	3.5
10	p	I had bad constipation	3.4
10	p	I was frightened	1.1
11	m	No-one checked I was ok afterwards	4 4
11	m	I had painful wind	3 4
11	m	I'd only have it again if really necessary	6.1
11	m	I had no psychological problems	3 6
11	m	I had terrible tummy cramps	3.4
11	m	I was in alot of pain when I got home	3.4
11	m	I found someone to say I was going	4 4
11	m	It was a horrible experience	5.3
11	m	I wished I'd known about the table moving	2.2
11	m	the staff were friendly, made me feel better	4.1
11	m	the staff were very nice	4.1
11	m	I felt very nervous	1.1
11	m	I didn't have information apart from the nurse	2 2
11	m	A nurse told me what would happen	4 1
11	m	I felt very heavy and bloated	3.4
11	m	It was worse than I thought it would be	5 3
12	m	It was better than I'd expected	5.2
12	m	I would have it again if I needed to	6.1
12	m	I am suffering from nervous tension now	3 5
12	m	no-one checked me before I left	4.4
12	m	I wish I'd known how it would make me feel	2.2
12	m	I was told to drink more afterwards	3.1
12	m	the radiologist was abrupt	4 2
12	m	they explained things in the room	4.1
12	m	I was worried about the outcome	1.3
12	m	I was very nervous	1.1
12	m	my GP explained what it involved	2.1
12	m	I wish I knew what they were looking for	1.3
12	m	I had to call the GP out as my stomach was so	3 4
13	m	I was given diet instructions afterwards	3.1
13	m	the nurse checked I was ok before I left	4.3
13	m	I was very sick for a week afterwards	3.4
13	m	My bowel was like cement, v painful	3.4
13	m	I'd only have it again if I had to	6.1
13	m	I was worried about the outcome	1 3
13	m	I wasn't worried about having it	1 2
13	m	I've had two so I knew what to expect	2.1
13	m	It was worse than I expected	5.3
13	m	Everyone was very nice	4.1

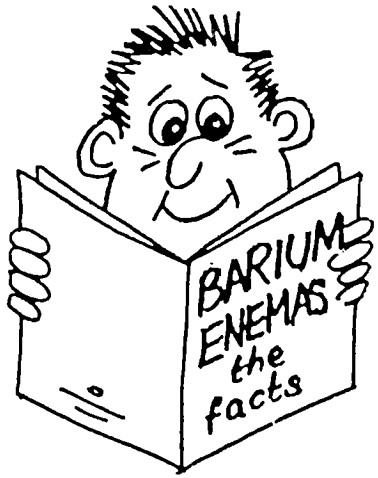
14	m	I was told to eat normally and drink more	3.1
14	m	I was anxious as I'd had ca bowel 3.5 yrs ago	1.5
14	m	I knew what happens from before	2.1
14	m	staff explained everything.they were very kind	4.1
14	m	It was better than I expected	5.2
14	m	They checked I was ok before I left	4.3
14	m	I had no after effects	3.6
14	m	I would have it done again	6.1
14	m	I was worried about the outcome	1.3
15	m	they were nice to me	4.1
15	m	It was worried I had alot of cancer	1.5
15	m	it was better than i expected	5.2
15	m	I was given eating and drinking instructions	3.1
15	m	I would have it again	6.1
15	m	I had a bit of wind	3.4
15	m	I was worried as they found a polyp on	1.5
15	m	I was told over the phone what happens as quick	2.1
16	m	I was in alot of pain the next day	3.4
16	m	I'd have it again if absolutely necessary	6.1
16	m	It was difficult to get rid of the barium	3.4
16	m	no-one checked I was ok before I left	4.4
16	m	I was given no instructions afterwards	3.2
16	m	I wished I knew how I'd feel afterwards	3.4
16	m	I was treated v. well Dr gave me good service	4.1
16	m	I wasn't worried about having it done	1.2
16	m	I am a retired GP so I knew what would happen	2.1
16	m	No-one explained that the barium would be	3.4
17	m	they checked I was ok before I left, somehow	4.3
17	m	no-one gave me instructions after	3.2
17	m	I had to call the doctor out I was in awful pain	3.4
17	m	I collapsed at work the next day	3.4
17	m	I kept having to go to the toilet in the X-ray rm	3.3
17	m	I would never have it done again(got thr'	6.2
17	m	they weren't worried about my feelings	4.2
17	m	I didn't stop going all day and night	3.4
17	m	I felt like they wanted the next person in	4.2
17	m	I felt in the way	4.2
17	m	I wish I had known how the table moved	2.2
17	m	I felt like I was on the slab	4.2
17	m	I would rather have a baby than a barium enema	6.2
17	m	I thought they were just going to take a picture	2.2
17	m	It was worse than I expected	5.3
17	m	I didn't feel I knew what was going to be done	2.2
17	m	I wish I'd known what the laxative was like before	3.3
18	m	It wasn't as bad as I expected	5.2
18	m	I would have it again	6.1
18	m	no-one checked I was ok before I left	4.4
18	m	I had no aftercare instructions	3.2
18	m	I was anxious about the result	1.3
18	m	I had no information about it	2.2
18	m	I had stomach pains& constipation	3.4
19	m	it was worse than I expected	5.3
19	m	I would go through it again if I had to	6.1
19	m	I was frightened as I was given no support	4.2
19	m	I had difficulty getting rid of the barium	3.4
19	m	I had no instructions afterwards	3.2
19	m	I wish I'd known what to expect	2.2
19	m	The hospital info didn't explain what happens	2.2
19	m	no-one checked I was ok before I left	4.4
20	m	the prep instructions were not clear	2.4
20	m	I would not have it done again	6.2
20	m	I wasn't sure what was happening	2.2
21	m	I didn't know what would happen	2.2
21	m	No-one checked I was ok	4.4
21	m	I had no instructions after	3.2
21	m	they explained in the room	4.1

21	m	I'd have it again	6.1
22	m	I have a medical background so know info	2.1
22	m	I had no aftercare instructions	3.2
22	m	No-one checked I was ok before I left	4.4
22	m	I was happier after due to the result	1.4
22	m	I would have it done again	6.1
22	m	I was anxious as family hx of Ca	1.5
23	m	The staff checked I was ok before I left	4.3
23	m	I'd have it again	6.1
23	m	I was told to eat normally and drink more	3.1
23	m	it was better than I expected	5.2
23	m	explained things in the room	4.1
23	m	staff v nice	4.1
23	m	I knew what to expect -had one before	2.1
23	m	I didn't like the laxative though	3.3
24	m	It was better than I expected	5.2
24	m	I'd have it done again	6.1
24	m	I had no after instructions	3.2
24	m	staff very kind	4.1
24	m	the staff explained everything in the room	4.1
24	m	I wasn't worried	1.2
24	m	I've had one before so I knew what it's like	2.1
24	m	No-one checked on me before I left	4.4
25	m	I didn't know what was going to happen	2.2
25	m	I didn't receive any information	2.2
25	m	they were excellent in the room	4.1
25	m	they explained eveything	4.1
25	m	I got given eating and drinking instructions after	3.1
25	m	They checked I was ok before they let me go	4.3
25	m	I'd have it again if I had to	6.1

Appendix 7

Questions you want to ask

BARIUM ENEMAS



Information for patients

Introduction

This booklet has been designed to explain what a Barium Enema is, what you need to do and what will happen to you. It is based on investigations involving Barium Enema patients, however it is not intended to be comprehensive. The radiographer and radiologist will be able to answer specific questions. Do ask, please do not suffer in silence.

I hope you find this helpful and I would welcome your comments and criticisms.

Sue Le Masurier
Department of Radiography Education
University of Wales Bangor
Wrexham Technology Park
Croesnewydd Road
Wrexham
LL13 7YP

Tel: 01978 316 205 Fax: 01978 316 209

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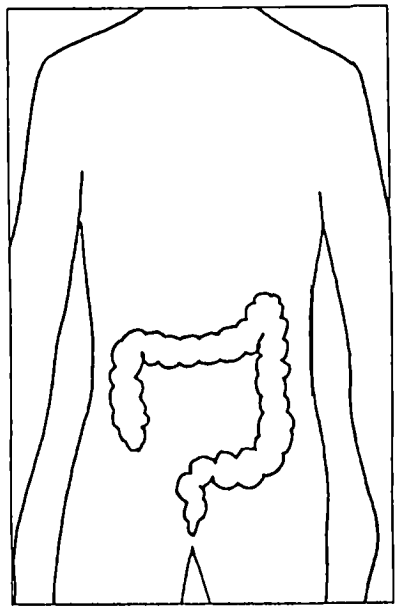
Norgine, makers of Klean-Prep

What is a Barium Enema?

This is a very common X-ray examination to look at your large bowel. To enable us to see it, the walls of the bowel need to be coated with a substance that can be seen on X-rays and you will be asked to turn into different positions so that we can see each part of the bowel clearly.



Preparation

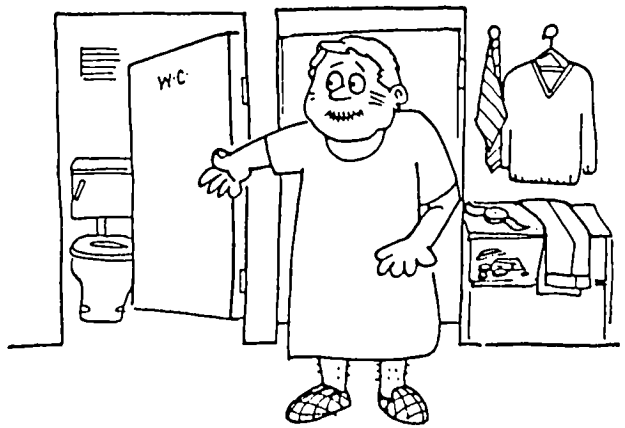
For the examination it is essential that your large intestine is empty. To do this you will be provided with a laxative, but you will also need to change your diet.
PLEASE make sure you follow the instructions sent with the laxatives EXACTLY. If you do not, we may not be able to carry out the Barium Enema. If you have any queries do not hestitate to contact the hospital.

The laxative is fast acting. You should expect frequent loose bowel movements within 1-2 hrs. You should therefore stay close to a toilet.

You should carefully follow the instructions provided with the laxative you are given.

The Barium Enema

When you arrive at the hospital you will be asked to remove all of your clothing and to put on a hospital gown. BRING A DRESSING GOWN with you to put on whilst you are waiting.



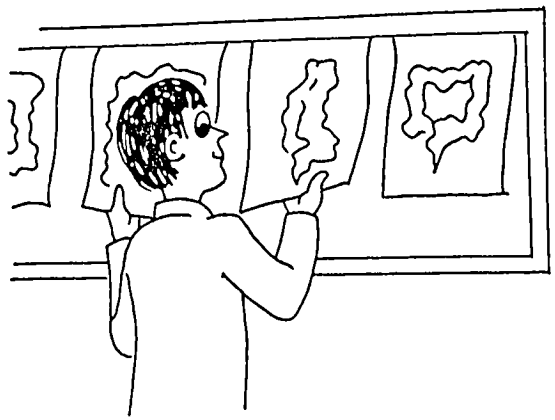
In the X-ray Room...

When you get into the room you will be asked to lie on the X-ray table on your side. This is so a small tube can be passed into your back passage. It is best if you try to relax whilst this is being done.

Barium will be run through this tube, this will be a strange feeling, like your bowel is working the opposite way to normal. It is important at this stage that you squeeze your bottom muscles tight to hold the tube and the barium inside.

The radiologist will be watching on the TV monitor as she or he runs the barium in. The excess of the barium will be run back out again down the tube as only a coating is necessary.

Then the radiologist will puff in some air via the tube, this is to help show both of the walls separately and thus to enable the whole bowel to be demonstrated. The air may feel as if it is bubbling in and may make you feel a little bloated and uncomfortable. However the examination is not supposed to be painful, so if you feel in pain please tell someone.



X-ray Room *continued*

Many pictures will be taken with different X-ray cameras and you will be asked to turn over into different positions, firstly to help coat the bowel and secondly for the pictures. You may also be asked to hold your breath for the pictures but that will only be for a short time.

When sufficient pictures have been taken and the radiologist has checked them, the tube will be taken out of your back passage and you will be taken to the toilet, where you can get rid of some of the barium and the air.

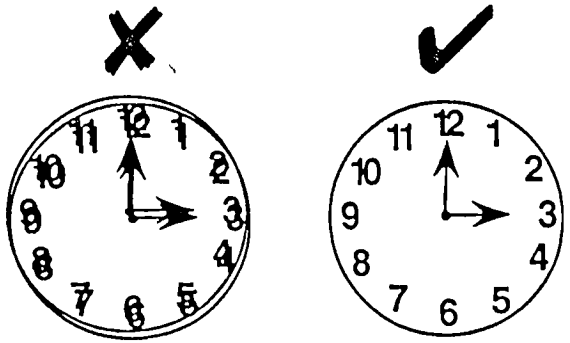
Sometimes the radiologist will want to take one more picture after you have been to the toilet. But after that you will be told that you can go home.

There will always be staff in the room with you to help explain what is happening, what you need to do and to help you.

Will I need an injection?

You may be given an injection in your arm at some stage, this is to relax the muscle in the bowel wall to make the examination more comfortable for you and to make it easier for us to take the pictures.

This injection may also relax the muscle in your eyes so make sure that your vision is not blurred when you leave. Check that you can read the time on your watch. The effects of the injection only last approximately 15 minutes so do not be worried.

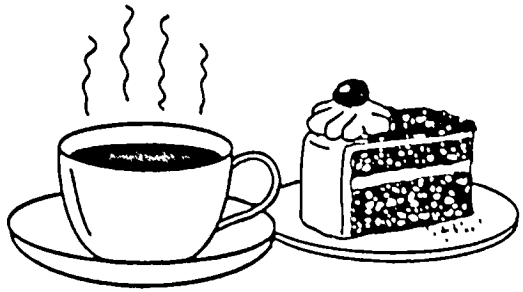


Afterwards

You can eat and drink normally once the examination is over. You are advised to drink more than normal to help get any barium left in the bowel out.

Do not be alarmed if your motions are white during the next week, it is just some of the barium and nothing to worry about.

If you are prone to constipation or feel constipated after the barium enema you may like to take a mild laxative.



Your results

The results of the barium enema will be sent to the doctor who arranged the examination for you. They should be available in 7 – 10 days time after the barium enema.

Appendix 8

SOFTWARE USABILITY MEASUREMENT INVENTORY

(SUMI)

Your name . . . . . .

Name of software . . . . . .

Date . . . . . .

> NB *the information you provide is kept completely confidential, and no information is stored on computer media that could identify you as a person.*

This inventory has fifty statements. Please answer every one of them. Against each statement there are three boxes.

You should mark the first box if you generally AGREE with the statement. Mark the central box if you are UNDECIDED, can't make up your mind, or if the statement has no relevance to your software or to your situation. Mark the right box if you generally DISAGREE with the statement.

In marking the left or right box you are not necessarily indicating *strong* agreement or disagreement but just your general feeling most of the time.

AGREE UNDECIDED DISAGREE

Put a ✔ mark in the box of your choice.

		Agree ↓	Undecided ↓	Disagree ↓
1	This software responds too slowly to inputs.	☐	☐	☐
2	I would recommend this software to my colleagues.	☐	☐	☐
3	The instructions and prompts are helpful.	☐	☐	☐
4	The software has at some time stopped unexpectedly.	☐	☐	☐
5	Learning to operate this software initially is full of problems.	☐	☐	☐
6	I sometimes don't know what to do next with this software.	☐	☐	☐
7	I enjoy my sessions with this software.	☐	☐	☐
8	I find that the help information given by this software is not very useful.	☐	☐	☐
9	If this software stops it is not easy to restart it.	☐	☐	☐
10	It takes too long to learn the software commands.	☐	☐	☐
11	I sometimes wonder if I am using the right command.	☐	☐	☐
12	Working with this software is satisfying.	☐	☐	☐
13	The way that system information is presented is clear and understandable.	☐	☐	☐
14	I feel safer if I use only a few familiar commands or operations.	☐	☐	☐
15	The software documentation is very informative.	☐	☐	☐
16	This software seems to disrupt the way I normally like to arrange my work.	☐	☐	☐
17	Working with this software is mentally stimulating.	☐	☐	☐
18	There is never enough information on the screen when it's needed.	☐	☐	☐
19	I feel in command of this software when I am using it.	☐	☐	☐
20	I prefer to stick to the facilities that I know best.	☐	☐	☐

		Agree ↓	Undecided ↓	Disagree ↓
21	I think this software is inconsistent.	☐	☐	☐
22	I would not like to use this software every day.	☐	☐	☐
23	I can understand and act on the information provided by this software.	☐	☐	☐
24	This software is awkward when I want to do something which is not standard.	☐	☐	☐
25	There is too much to read before you can use the software.	☐	☐	☐
26	Tasks can be performed in a straight forward manner using this software.	☐	☐	☐
27	Using this software is frustrating.	☐	☐	☐
28	The software has helped me overcome any problems I have had in using it.	☐	☐	☐
29	The speed of this software is fast enough.	☐	☐	☐
30	I keep having to go back to look at the guides.	☐	☐	☐
31	It is obvious that user needs have been fully taken into consideration.	☐	☐	☐
32	There have been times in using this software when I have felt quite tense.	☐	☐	☐
33	The organisation of the menus or information lists seems quite logical.	☐	☐	☐
34	The software allows the user to be economic of keystrokes.	☐	☐	☐
35	Learning how to use new functions is difficult.	☐	☐	☐
36	There are too many steps required to get something to work.	☐	☐	☐
37	I think this software has made me have a headache on occasions.	☐	☐	☐
38	Error prevention messages are not adequate.	☐	☐	☐
39	It is easy to make the software do exactly what you want.	☐	☐	☐
40	I will never learn to use all that is offered in this software.	☐	☐	☐

Please continue overleaf

		Agree ↓	Undecided ↓	Disagree ↓
41	The software hasn't always done what I was expecting.	☐	☐	☐
42	The software has a very attractive presentation.	☐	☐	☐
43	Either the amount or quality of the help information varies across the system.	☐	☐	☐
44	It is relatively easy to move from one part of a task to another.	☐	☐	☐
45	It is easy to forget how to do things with this software.	☐	☐	☐
46	This software occasionally behaves in a way which can't be understood.	☐	☐	☐
47	This software is really very awkward.	☐	☐	☐
48	It is easy to see at a glance what the options are at each stage.	☐	☐	☐
49	Getting data files in and out of the system is not easy.	☐	☐	☐
50	I have to look for assistance most times when I use this software.	☐	☐	☐

Please check you have ticked each item.
Thank you.

PLEASE ANSWER THE FOLLOWING QUESTIONS BY PLACING A TICK IN THE BOX NEXT TO THE ANSWER WHICH IS RIGHT FOR YOU OR BY WRITING YOUR COMMENTS IN THE BOX PROVIDED.

1. Please indicate which age group you belong to:

18-29 [ ] 30-39 [ ] 40-49 [ ] 50-59 [ ] 60-69 [ ] 70-79 [ ]

80 and over [ ]

---

2. Please indicate your sex:

Male [ ] Female [ ]

---

3. Please indicate your level of working computer knowledge :

Expert [ ] Good [ ] O.K [ ] Poor [ ] Very Poor [ ]

---

4. Please indicate how you rate the information content given:

Very Good [ ] Good [ ] O.K. [ ] Poor [ ] Very Poor [ ]

---

5. Please indicate how `user friendly you felt the information system was:

Very Good [ ] Good [ ] O.K. [ ] Poor [ ] Very Poor [ ]

PLEASE ANSWER THE FOLLOWING QUESTIONS ABOUT THE INFORMATION YOU HAVE JUST SEEN:

1. The Barium enema is an x-ray of the large and small bowel
TRUE [ ] FALSE [ ]

2. You need to take laxatives before a Barium enema
TRUE [ ] FALSE [ ]

3. You can eat normally before a Barium enema
TRUE [ ] FALSE [ ]

4. You will be able to keep all your own clothes on
TRUE [ ] FALSE [ ]

5. You will be asked to drink some Barium
TRUE [ ] FALSE [ ]

6. You may have to have an injection
TRUE [ ] FALSE [ ]

7. You need to bring a dressing gown with you
TRUE [ ] FALSE [ ]

8. If you are diabetic you should contact the x-ray department
TRUE [ ] FALSE [ ]

9. It is advisable to spend time in the toilet after the Barium enema before you go home
TRUE [ ] FALSE [ ]

10. You should drink less than normal after the examination
TRUE [ ] FALSE [ ]

11. How long should you expect the examination to take _____minutes

P.T.O

12. When attending for your Barium enema where should you go to

a. Outpatients [ ]
b. X-ray (A) [ ]
c. X-ray (B) [ ]
d. G.P [ ]
e. None of the above [ ]

---

13. If you are taking iron tablets should you

a. Continue taking them [ ]
b. Stop taking them as soon as you get the appointment [ ]
c. Stop taking them 3 days before the examination [ ]
d. Stop taking them 2 days before the examination [ ]
e. Stop taking them on the day of the examination [ ]

---

14. What is put into the bowel for a Barium enema

a. Barium [ ]
b. Barium and air [ ]
c. Barium and Water [ ]
d. Gastrografffin [ ]
e. Nothing [ ]

---

15. Will the radiation you receive from the Barium enema be

a. No risk to my health [ ]
b. A fatal dose of radiation [ ]
c. A dose that is harmful to my health [ ]
d. The risk from the dose is outweighed against the benefit to my health [ ]
e. A dose that is not harmful to my health [ ]

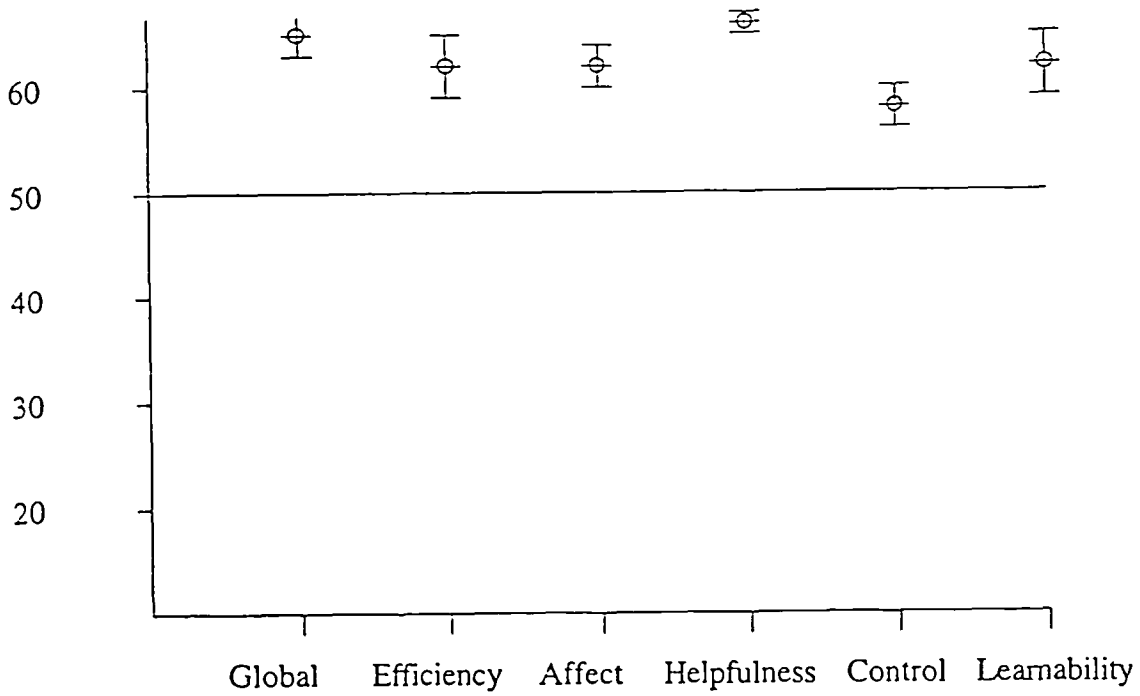
THANKYOU FOR TAKING PART IN THIS RESEARCH

Appendix 9

Sumi raw data

	UF	Ucl	Median	Lcl	LF
Global	75	67	65	63	54
Efficiency	85	65	62	59	41
Affect	77	64	62	60	50
Helpfulness	69	67	66	65	61
Control	73	60	58	56	40
Learnability	76	65	62	59	52

Chart to demonstrate Sumi data



	before	after	age	sex	cknow	infocont	ufriend
1	4	14	70	0	4	0	2
2	9	15	40	1	2	0	1
3	4	14	30	1	2	0	0
4	5	15	30	0	2	0	0
5	7	14	60	1	3	1	2
6	6	15	40	0	3	1	1
7	5	12	60	0	3	0	0
8	4	15	40	0	2	1	1
9	7	15	30	1	1	1	1
10	7	15	80	0	4	0	0
11	6	14	40	0	2	0	0
12	1	15	30	0	1	0	0
13	7	15	40	0	2	0	1
14	6	15	40	0	2	0	0
15	7	14	50	1	2	0	0
16	2	12	70	1	4	1	2
17	4	14	70	0	4	0	1
18	4	15	60	0	4	0	1
19	2	13	50	1	3	0	1
20	5	15	40	0	2	0	1
21	9	14	80	1	4	1	1
22	7	13	80	1	4	1	2
23	8	14	30	0	2	0	1
24	6	12	70	0	4	0	0
25	4	15	40	1	2	0	0
26	11	13	60	0	4	0	0
27	12	15	50	0	2	0	0
28	12	14	40	1	1	1	1
29	5	14	30	1	2	0	1
30	9	13	50	0	2	1	0
31	6	14	40	0	1	0	0
32	5	12	40	1	2	0	0

Knowledge gain raw data

Appendix 10

The Department of Radiography Education
(University of Wales, Bangor)
Wrexham Technology Park
Croesnewydd Road Wrexham
LL13 7YP
Tel: 0978 316205 Fax: 01978 316209

Dear Sir / Madam,

I am a radiographer studying for a PhD in radiography at the University of Wales, Bangor.

As part of my research I have chosen to look at the knowledge and anxiety levels of patients attending for Barium Enema x-ray examinations.

To enable me to carry this out, I need and will be very grateful for your co-operation in filling out the attached questionnaires. Please read through them, but do not feel pressurised into completing them if you do not wish to do so. Your treatment will be the same whether or not you fill in the questionnaires. Your anonymity will be preserved. And I would like to take this opportunity to thank you for your time and help with my research.

If you require any further information please do not hesitate to contact me at the above address or feel free to ask in the x-ray department.

Thankyou
Sue Le Masurier

Course Director: Mrs. P Calmer

INFORMATION SHEET

PURPOSE OF THE INVESTIGATION

To find out how information about the Barium Enema x-ray affects the anxiety of patients attending for the examination.

TYPE OF INVESTIGATION

Two anonymous questionnaires, the first before you have your Barium Enema x-ray and the second afterwards.
From this I hope to find out how much you have been told about the procedure and how you feel about having the examination.
Each questionnaire should take no more then 10 minutes to complete, which means about 20 minutes of your time maximum.

BENEFIT

As a result of this research, I hope that in the future it may be possible to provide the relevant information to the patients at the right time and in doing so make the visit to the x-ray department less traumatic.

YOUR RIGHTS IN THIS INVESTIGATION

Anyone not willing to join the investigation may decline to do so without giving any reason or being subject to any hard feelings. In addition, if having completed the questionnaire you do not wish to hand it in do not feel obliged to do so, however your co-operation would be appreciated.

FIRST QUESTIONNAIRE

Please answer the following questions by placing a tick in the box next to the answer which is right for you or by writing your own comments in the space provided.

---

1. Please indicate which age group you belong to :

18-29 yrs [ ] 30-39 yrs [ ] 40-59 yrs [ ] 60-79 yrs [ ] Over 80 yrs [ ]

---

2. Please indicate your sex :

Male [ ] Female [ ]

---

3. Please indicate your first language :

English [ ] Welsh [ ] Other [ ] please specify

.....

---

4. Please indicate who sent you for this examination :

G.P. [ ] Doctor at the Hospital [ ] Other [ ] please specify

.....

---

5. Have you ever had a Barium Enema examination before ?

Yes [ ] No [ ]

---

6. Please state which bowel preparation you received:
(If you are unsure, please ask a member of staff)

.....

---

7. Where would you prefer to wait for your Barium Enema ?.

Alone [ ]

In the waiting area with other Barium Enema patients [ ]

In the waiting area with patients not having a Barium Enema [ ]

Do not have a preference [ ]

For Question 8 please place a cross along the line at the point which you feel best represents how you feel.

example. strongly agree_____strongly disagree

8. Do you feel that you have sufficient information about the Barium Enema examination?.

Strongly agree_____Strongly Disagree

---

9. Where did you obtain any information about the examination from?.

G.P. [ ] Doctor at the Hospital [ ] X-ray department [ ]

Radiographer [ ] Friend / Relative [ ] Other [ ] please specify

.....

---

10. What form did the information you obtained take ?.

Verbal [ ] Written Leaflet [ ] Written Sheet [ ] Other [ ] please specify

.....

For Questions 11 and 12 please place a cross on the line at the point which you feel best represents how you feel

11. How do you feel AT THIS MOMENT

Very relaxed_____Very Anxious

---

12. How do you feel ON A NORMAL DAY

Very relaxed_____Very Anxious

Please could you now complete the next section SELF - EVALUATION QUESTIONNAIRE BEFORE your Barium Enema

SELF-EVALUATION QUESTIONNAIRE

STAI Form Y-1

Please provide the following information:

Name_____ Date_____ S_____

Age_____ Gender (*Circle*) **M** **F** T_____

DIRECTIONS:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened	1	2	3	4
10. I feel comfortable	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady	1	2	3	4
20. I feel pleasant	1	2	3	4

SECOND QUESTIONNAIRE

Please answer the following questions after your Barium Enema examination, either by placing a tick in the box or writing your own comments in the space provided.

---

1. Do you now feel that you had sufficient information about the examination ?.

Yes [ ] No [ ]

If NO what additional information would you have liked to have received?

.....
.....
.....

---

2. Please indicate how you feel about the Barium Enema examination you have just had:

Better than I expected [ ] Just as I expected [ ]

Worse than I expected [ ]

---

3. Is there anything that you wished you had not known about the Barium Enema examination?.

Yes [ ] No [ ]

If YES please state what

.....
.....
.....

---

4. Were you anxious about attending for your Barium Enema examination ?.

Yes [ ] No [ ]

If YES why were you anxious and was this justified ?

.....
.....
.....

---

5. Did the staff explain what was going to happen to you before it was done in the x-ray room?.

Yes [ ] No [ ]

---

6. Did you receive any instructions about eating, drinking, or what you should do now that the examination is over ?.

Yes [ ] No [ ]

If YES what instructions can you remember ?

.....

.....

.....

.....

Thankyou for completing this questionnaire.

If you are prepared to discuss your Barium Enema further with me, please could you leave your name and address / telephone number below.

Please feel free to contact me at the address below if you have any further comments or if you experience any effects which you would be prepared to tell me about. Thankyou.

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Tel 01978 316 205 Fax 01978 316 209

State-Trait Anxiety Inventory for Adults

Self-Evaluation Questionnaire

STAI Form Y-1 and Form Y-2

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August 14, 1995

Developed by Charles D. Spielberger
in collaboration with R.L. Gorsuch, R. Lushene, P.R. Vagg, and G.A. Jacobs

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Appendix 11

Frequency of responses showing the distributions for anxiety on normal days and just before the barium enema examination are shown in tables A11.1 and A11.2 below.

TABLE A11.1 DISTRIBUTION OF 'HOW DO YOU FEEL ON A NORMAL DAY'

Value	Frequency	Valid %	Cum %
0.0	28	5.5	5.5
0.5	74	14.5	19.9
1.0	78	15.2	35.2
1.5	55	10.7	45.9
2.0	66	12.9	58.8
2.5	29	5.7	64.5
3.0	45	8.8	73.2
3.5	18	3.5	76.8
4.0	27	5.3	82.0
4.5	15	2.9	85.0
5.0	31	6.1	91.0
5.5	6	1.2	92.2
6.0	5	1.0	93.2
6.5	3	0.6	93.8
7.0	3	0.6	94.3
7.5	1	0.2	94.5
8.0	2	0.4	94.9
8.5	1	0.2	95.1
9.0	11	2.1	97.3
9.5	5	1.0	98.2
10.0	9	1.8	100.0
-9.00	2	Missing	Missing

0 = very relaxed 10 = very anxious

Mean	2.544	Mode	1.000	Std dev	2.265
Skewness	1.532	S E Skew	0.108		

TABLE A11.2 DISTRIBUTION OF 'HOW DO YOU FEEL NOW'

Value	Frequency	Valid %	Cum %
0.0	13	2.5	2.5
0.5	32	6.2	8.8
1.0	32	6.2	15.0
1.5	19	3.7	18.7
2.0	25	4.9	23.6
2.5	20	3.9	27.5
3.0	26	5.1	32.6
3.5	18	3.5	36.1
4.0	20	3.9	40.0
4.5	30	5.8	45.8
5.0	55	10.7	56.5
5.5	12	2.3	58.9
6.0	18	3.5	62.4
6.5	10	1.9	64.3
7.0	24	4.7	69.0
7.5	20	3.9	72.9
8.0	17	3.3	76.2
8.5	12	2.3	78.6
9.0	44	8.6	87.1
9.5	30	5.8	93.0
10.0	36	7.0	100.0
-9.0	1	Missing	Missing

0 = very relaxed 10 = very anxious

Mean	5.153	Mode	5.000	Std dev	3.126
Skewness	0.038	S E Skew	0.108		

Figure 11.1

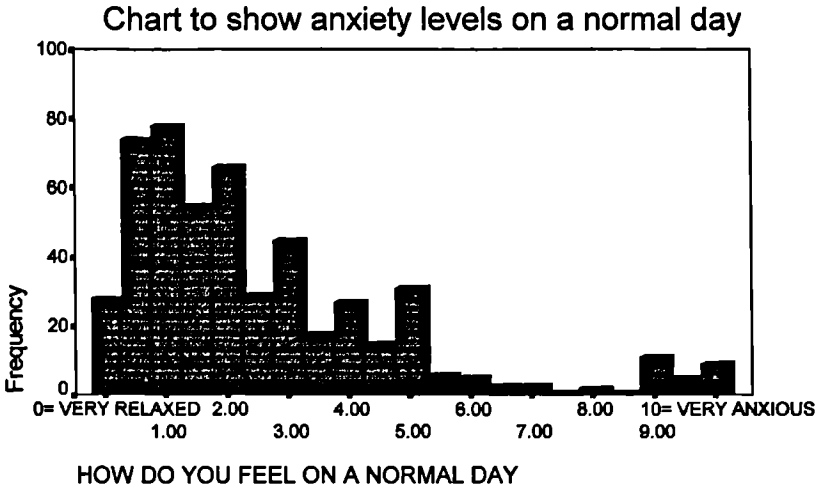
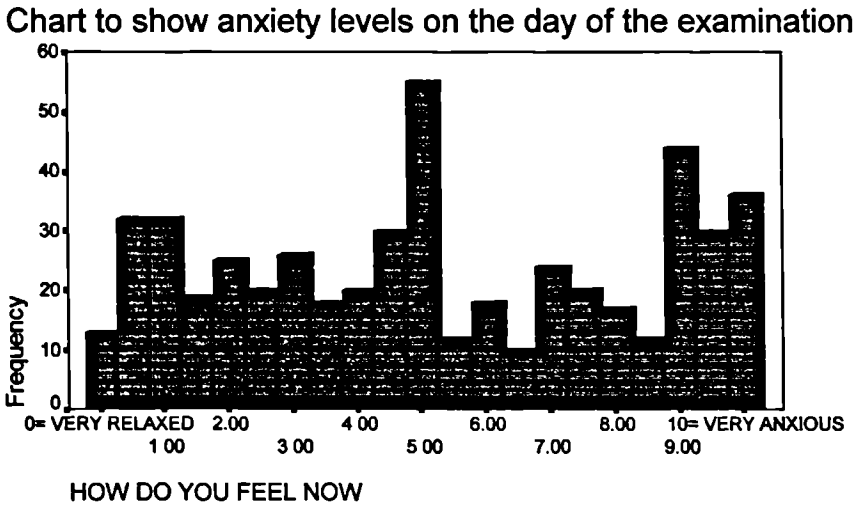


Figure 11.2



Appendix 12

Frequency of responses showing the distributions for whether barium enema patients feel that they have sufficient information are shown in table 12.1 below

TABLE A12.1 DISTRIBUTION OF 'DO YOU FEEL YOU HAVE SUFFICIENT INFORMATION'

Value	Frequency	Valid %	Cum %
0.0	10	2.0	2.0
0.5	32	6.3	8.2
1.0	111	21.8	30.0
1.5	63	12.4	42.4
2.0	51	10.0	52.4
2.5	39	7.6	60.0
3.0	38	7.5	67.5
3.5	16	3.1	70.6
4.0	14	2.7	73.3
4.5	19	3.7	77.1
5.0	27	5.3	82.4
5.5	10	2.0	84.3
6.0	14	2.7	87.1
6.5	7	1.4	88.4
7.0	11	2.2	90.6
7.5	7	1.4	92.0
8.0	10	2.0	93.9
8.5	7	1.4	95.3
9.0	8	1.6	96.9
9.5	8	1.6	98.4
10.0	8	1.6	100.0
-9.0	4	Missing	Missing

0 = strongly agree 10 = strongly disagree

Mean	3.037	Mode	1.000	Std dev	2.498
Skewness	1.173	S E Skew	0.108		

Appendix 13

Mann Whitney U and Wilcoxon Rank Sum W test for feelings of having suffieient information by form of information

INFO SUFFICIENT INFORMATION?
by FORM WHAT FORM OF INFORMATION

Mean Rank	Cases		
181.45	254	FORM = 1	1= LEAFLET
240.35	152	FORM = 2	2= SHEET

	406	Total	

Corrected for ties

U	W	Z	2-Tailed P
13703.0	36533.0	-4.9360	.0000

Appendix 14

ANOVA for effects on feeling of having sufficient information

Analysis of V a r i a n c e
Tests of Significance for SQINFO using SEQUENTIAL Sums of Squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	154.15	379	.41		
SEX	.78	1	.78	1.91	.167
GRPAGE	3.47	4	.87	2.13	.076
SENDER	1.05	2	.53	1.29	.276
FORM	14.53	1	14.53	35.71	.000
GRPAGE * SEX	1.08	4	.27	.66	.619
SENDER * SEX	.97	2	.48	1.19	.306
FORM * SEX	.00	1	.00	.01	.923
GRPAGE * SENDER	2.32	4	.58	1.43	.225
FORM * GRPAGE	1.65	4	.41	1.02	.399
FORM * SENDER	.02	1	.02	.05	.817
(Model)	25.86	24	1.08	2.65	.000
(Total)	180.02		403	.45	

R-Squared = .144
Adjusted R-Squared =.089

Appendix 15

Summaries of t-tests carried out to locate effects of variables on the change in anxiety levels

TABLE A15.1 T-TEST OF EFFECT OF AGE ON THE CHANGE IN ANXIETY LEVELS

Summaries of CHANGE By levels of AGE

Variable	Value Label	Mean	Std Dev
GRPAGE	1.00	4.3235	3.4503
GRPAGE	2.00	3.9211	3.1370
GRPAGE	3.00	2.8223	3.1866
GRPAGE	4.00	2.4669	3.3436
GRPAGE	5.00	1.4054	2.8427

1= 18-29 years
2= 30-39 years
3= 40-59 years
4= 60-79 years
5= 80 + years

This shows that those in the younger two age groups, (18-29 and 30-39) showed greater change in anxiety levels compared to those over 40 years of age.

TABLE A15.2 T-TEST OF THE EFFECT OF WHO SENT THE RESPONDENT ON THE CHANGE IN ANXIETY LEVELS

Summaries of CHANGE By levels of SENDER

Variable	Label	Mean	Std Dev
SENDER	0=DR AT HOSPITAL	2.8277	3.4227
SENDER	1= GP	2.4368	3.1516
SENDER	2= OTHER	3.0000	4.1433

This shows that there appears to be no great effect in change of the anxiety levels depending on who sent the respondents for the examination.

TABLE A15.3 2-WAY T-TEST OF THE EFFECT OF BOWEL PREPARATION BY THE FORM OF INFORMATION ON THE CHANGE IN ANXIETY LEVELS

	BOWEL PREPARATION	
	0= OTHER	1= PICOLAX
	Mean	Mean
WHAT FORM OF INFORMATION		
1= LEAFLET		
SQRTCHAN	3.39	3.44
2= SHEET		
SQRTCHAN	3.70	3.54

TABLE A15.4 INDEPENDENT T-TEST OF THE EFFECT OF BOWEL PREPARATION ON THE CHANGE IN ANXIETY LEVELS

t-tests for independent samples of PREP BOWEL PREPARATION

Variable	No of Cases	Mean	SD	SE of Mean
CHANGE				
0= OTHER	157	2.7962	3.330	.266
1= PICOLAX	355	2.5408	3.267	.173

Mean Difference = .2553

Levene's Test for Equality of Variances: F= 1.978 P= .160

t-test for Equality of Means

TABLE A15.4.1

Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	.81	510	.418	.315	(-.364, .874)
Unequal	.80	293.64	.422	.317	(-.369, .880)

This shows that there is no statistically significant difference in change in anxiety levels for different bowel preparations, and that this is not dependant on the form of information.

TABLE A15.5 T-TEST OF THE EFFECT OF GENDER ON THE CHANGE IN ANXIETY LEVELS

Summaries of CHANGE By levels of SEX

Variable	Label	Mean	Std Dev
SEX	0= FEMALE	3.0167	3.3820
SEX	1= MALE	2.0566	3.0632

TABLE A15.6 INDEPENDENT T-TEST OF THE EFFECT OF GENDER ON THE CHANGE IN ANXIETY LEVELS

t-tests for independent samples of SEX

Variable	No of cases	Mean	SD	SE of Mean
CHANGE				
0= FEMALE	300	3.0167	3.382	.195
1= MALE	212	2.0566	3.063	.210

Mean Difference = .9601

Levene's Test for Equality of Variances: F= 6.919 P= .009

t-test for Equality of Means

TABLE A15.6.1

Variances	t-value	df	2-Tail Sig	SE of Diff	95%CI for Diff
Equal	3.29	510	.001	.292	(.386, 1.534)
Unequal	3.34	479.83	.001	.287	(.396, 1.524)

This shows that males have significantly less change in anxiety levels than females.

TABLE A15.7 T-TEST OF EFFECT OF THE FORM OF INFORMATION ON THE CHANGE IN ANXIETY LEVELS

By levels of FORM WHAT FORM OF INFORMATION

Variable	Label	Mean	Std Dev
FORM	1= LEAFLET	1.8953	2.7530
FORM	2= SHEET	3.2161	3.4665

This clearly demonstrates that the leaflet group has a lower mean level of change of anxiety compared to those that received the standard hospital information sheet.

TABLE A15.8 INDEPENDENT T-TEST OF THE EFFECT OF THE FORM OF INFORMATION ON THE CHANGE IN ANXIETY LEVELS

t-tests for independent samples of FORM WHAT FORM OF INFORMATION

Variable	No of Cases	Mean	SD	SE of Mean
CHANGE				
1= LEAFLET	253	1.8953	2.753	.173
2= SHEET	155	3.2161	3.466	.278

Mean Difference = -1.3209

Levene's Test for Equality of Variances: F= 18.450 P= .000

t-test for Equality of Means

TABLE A15.8.1

Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-4.25	406	.000	.310	(-1.931, -.710)
Unequal	-4.03	271.26	.000	.328	(-1.966, -.675)

TABLE A15.9 INDEPENDENT T-TEST OF THE EFFECT OF THE FORM OF INFORMATION ON THE LEVEL OF ANXIETY BEFORE THE BARIUM ENEMA

t-tests for independent samples of FORM - WHAT FORM OF INFORMATION

Variable	No of Cases	Mean	SD	SE of Mean
FEELNOW HOW DO YOU FEEL NOW				
1= LEAFLET	253	4.4723	2.885	.181
2= SHEET	155	5.6677	3.124	.251

Mean Difference = -1.1954

Levene's Test for Equality of Variances: F= 2.497 P= .115

t-test for Equality of Means

TABLE A15.9.1

Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-3.94	406	.000	.304	(-1.793, -.598)
Unequal	-3.86	305.92	.000	.310	(-1.805, -.586)

TABLE A15.10 INDEPENDENT T-TEST OF THE EFFECT OF THE FEELING OF HAVING SUFFICIENT INFORMATION ON THE LEVEL OF ANXIETY BEFORE THE BARIUM ENEMA

t-tests for independent samples of INFO - SUFFICIENT INFORMATION?

Variable	No of Cases	Mean	SD	SE of Mean
FEELNOW HOW DO YOU FEEL NOW				
INFO >= 5	117	6.4316	2.797	.259
INFO < 5	392	4.8112	3.115	.157

Mean Difference = 1.6204

Levene's Test for Equality of Variances: F= 2.662 P= .103

t-test for Equality of Means

TABLE A15.10.1

Variances	t-value	df	2-Tail Sig	SE of Diff	95%CI for Diff
Equal	5.05	507	.000	.321	(.990, 2.251)
Unequal	5.35	209.27	.000	.303	(1.024, 2.217)

TABLE A15.11 INDEPENDENT T-TEST OF THE EFFECT OF THE FEELING OF SUFFICIENT INFORMATION ON THE LEVEL OF ANXIETY ON A NORMAL DAY

t-tests for independent samples of INFO SUFFICIENT INFORMATION?

Variable	No of Cases	Mean	SD	SE of Mean
FEELNORM HOW DO YOU FEEL ON A NORMAL DAY				
INFO >= 5	117	2.3718	2.050	.190
INFO < 5	392	2.6020	2.331	.118

Mean Difference = -.2302

Levene's Test for Equality of Variances: F= 2.882 P= .090

t-test for Equality of Means

TABLE A15.11.1

Variances	t-value	df	2-Tail Sig	SE of Diff	95%CI for Diff
Equal	-.96	507	.336	.239	(-.700, .240)
Unequal	-1.03	213.35	.303	.223	(-.670, .210)

Appendix 16

BARIUM ENEMA EXPERIENCES AND FEELINGS ADAPTED INTERVIEW QUESTIONS

1. Did you feel that you knew what was going to happen in the barium enema examination

2. Where did you get the information from

3. How did you feel about having the Barium enema done

4. Can you tell me what happened in the examination and how you felt that day.

5. Is there anything you wished that you had known about the examination before you had it done.

6. Do you feel that you worried unnecessarily about anything

7. Was it a better or worse experience than you expected

8. Did anybody give you any instructions after you left the examination

9. Did anybody check that you were ok before you left

10. Have you had any physical after effects which you could attribute DIRECTLY to the Barium enema

11. Have you had any psychological after effects which you could attribute DIRECTLY to the Barium enema

12. Would you have it done again

Appendix 17

TABLE A17.1 RAW RESPONSE DATA OF FOURTH STUDY INTERVIEWS

identification	location	description	code
1	b	I wasn't bothered about having it done	1.2
1	b	Everything was fine	5.1
1	b	It was better than I expected	5.2
1	b	I was given eating and drinking instructions after	3.1
1	b	The nurse checked I was ok before I left	4.3
1	b	I would have it done again	6.1
1	b	the doctor who sent me explained the test	2.1
2	s	I had terrible stomach pains after	3.4
2	s	the laxative was the worst thing	3.3
2	s	It was painful getting rid of the barium	3.4
2	s	they checked I was ok before I could go	4.3
2	s	they gave me eating and drinking instructions	3.1
2	s	It was better than I expected	5.2
2	s	I thought I had cancer	1.5
2	s	I was apprehensive about the unknown	1.1
2	s	My GP explained what happens	2.1
2	s	I'd have it again if I had to	6.1
2	s	they explained things before they did them	4.1
3	ygc	It was better than I thought it would be	5.2
3	ygc	I would have it done again	6.1
3	ygc	I was told to resume eating and to drink extra	3.1
3	ygc	I just wanted to get it over with	1.2
3	ygc	the hospital sent the information, it was ok	2.1
3	ygc	no-one checked me before I left	4.4
4	s	I had no instructions afterwards	3.2
4	s	no-one checked I was ok afterwards	4.4
4	s	I would have it done again	6.1
4	s	No-one explained what to expect	2.2
4	s	I had alot of pain after	3.4
4	s	I have a family hx of cancer	1.5
4	s	the staff explained everything	4.1
4	s	I was frightened as my stools were white	2.2
4	s	I was relieved to be getting something done	1.2
4	s	I got information from the appt letter	2.2
4	s	it was ok	5.1
5	b	I had no food instructions after	3.2
5	b	I was told get up there, turn over etc	4.2
5	b	I had to go to the gp	3.4
5	b	I felt very dozy	3.4
5	b	I had severe diarrhoea after	3.4
5	b	the staff didn't speak much	4.2
5	b	i didn't think I would be able to hold on to the b	1.1
5	b	the laxative kept me on the toilet all the time	3.3
5	b	infomation not good	2.2
5	b	I collapsed at work the next day	3.4
6	s	I've had cancer before	1.5
6	s	I was given aftercare instructions	3.1
6	s	I was really constipated after- quite painful	3.4
6	s	I would have it done again	6.1
6	s	They checked on me before I left	4.3
6	s	I think I worried unnecessarily	1.4
6	s	They really reassured me	4.1
6	s	They showed everything on the monitor	4.1
6	s	I knew what happens from before	2.1
6	s	I was frightened of a recurrence of the cancer	1.5
7	ygc	It was better than I expected	5.2
7	ygc	I was frightened of what would be done	1.1
7	ygc	I'd have it again if I had to	6.1
7	ygc	I had no after effects	3.6
7	ygc	They checked I was ok before I left	4.3
7	ygc	I had no aftercare instructions	3.2
7	ygc	I wish I'd had info about the exam procedure	2.2
7	ygc	I had no information	2.2

7	ygc	I was nervous	1.1
7	ygc	I had no idea what to expect	2.2
7	ygc	I'd felt better if I knew what was going to happen	2.2
8	s	I knew what to expect as I'd had one before	2.1
8	s	I had a verbal explanation before they did it	4.1
8	s	I worried a bit about the injection	1.4
8	s	It was far better than I expected	5.2
8	s	They immediately gave me the aftercare instruction	3.1
8	s	I was checked on before I left	4.3
8	s	I'd have it again	6.1
9	s	It was just as I expected	5.1
9	s	I'd go through it again	6.1
9	s	I had aftercare instructions	3.1
9	s	They explained everything first	4.1
9	s	I wasn't bothered about it	1.2
9	s	The doctor explained what it involved	4.1
9	s	I was checked on before leaving	4.3
10	s	We have a family hx of cancer	1.5
10	s	I had no information about it at all	2.2
10	s	I was worried but ok	1.1
10	s	I was turned about alot, but told what to do	4.1
10	s	I had no instructions aftewards	3.2
10	s	They checked I was ok after	4.3
10	s	I had bad constipation afterwards	3.4
10	s	I would have it done again	6.1
11	s	It was painful	5.3
11	s	I'd have it again only in dire circumstances	6.1
11	s	I had to stay in bed	3.4
11	s	I had a leaflet which explained what happens	7.1
11	s	I had severe stomach pain	3.4
11	s	It was worse then I expected it to be	5.3
12	s	I had an info booklet from the hospital	7.1
12	s	I wasn't bothered about having it done	1.2
12	s	The staff were very nice	4.1
12	s	It was fine	5.1
12	s	I wasn't given aftercare instructions	3.2
12	s	They checked me before I left	4.3
12	s	I had really sever stomach ache after	3.4
12	s	I have it again if necessary	6.1
13	s	It was better than I expected	5.2
13	s	I wouldn't mind having it again	6.1
13	s	I had bad diarrhoea for 3 days after	3.4
13	s	I had eating/drinking info after	3.1
13	s	I was worried about the outcome that's all	1.3
13	s	My wife told me what would happen	2.2
13	s	I was checked on before I left	4.3
14	s	I had really bad diarrhoea for a week after	3 4
14	s	I didn't know what it involved really	2.2
14	s	My dad told me gory horrid details (he's had one)	2.2
14	s	I was anxious	1.1
14	s	I didn't want it done	1.1
14	s	It was really horrible	5.3
14	s	I had no instructions after	3.2
14	s	I wish they'd tell you what it's like after	2.2
14	s	I'd have it again if I had to	6.1
14	s	No-one checked on me after	4 4
15	s	I had the info leaflet	7.1
15	s	I was a bit apprehensive, not anxious	1.2
15	s	It was fine	5.1
15	s	I had no aftercare instructions	3.2
15	s	They checked on me before I left	4.3
15	s	I'll have it again	6.1
16	s	It was better than I expected	5.2
16	s	I'd have it again	6.1
16	s	I had eat/drink instructions	3 1
16	s	They explained to me what they were doing	4.1

16	s	I was a bit dubious	1.1
16	s	I had a booklet, so I knew what to expact	7.1
16	s	I was checked on before I left	4.3
17	ygc	I would have liked more diet info	2.4
17	ygc	I had no physical after effects	3.6
17	ygc	I think the booklet made me less anxious	7 3
17	ygc	It was simple, not too technical	7.1
17	ygc	the booklet was easy to understand	7.1
17	ygc	I'd have it again	6.1
17	ygc	I had no psychological after effects	3.7
17	ygc	I had instructions after	3.1
17	ygc	It was better than I expected	5.2
17	ygc	I worried unecessarily about holding on to the Ba	1 4
17	ygc	Everyone was nice	4.1
17	ygc	I knew what to expect from the leaflet	7.1
17	ygc	I was worried about holding on to the barium	1.1
17	ygc	No-one checked I was ok before I left	4.4
18	ygc	I had diarrhoea	3.4
18	ygc	The booklet decreased my anxiety	7.3
18	ygc	booklet-easy to understand	7.1
18	ygc	I'd rather have something else done (surgery)	6.2
18	ygc	I'd have it again rf I was reaaly ill	6.1
18	ygc	no psychological effects	3.7
18	ygc	had a booklet-knew what I was in for	7.1
18	ygc	I was worried as I'd been told I'd be constipated	3.4
18	ygc	A lady checked I was ok before I left	4.4
18	ygc	I had instructions after- drink extra etc	3.1
18	ygc	It was just as I expected	5.1
18	ygc	they explained what was happening	4.1
18	ygc	the staff were nice	4.1
18	ygc	I was ready for what would be done	2.1
18	ygc	I felt prepared	2.1
18	ygc	I had bad stomach ache	3.4
18	ygc	I phoned the doctor	3.4
19	s	I had no instructions after	3.2
19	s	I was told to go to the toilet and go home	4 4
19	s	I didn't see anyone after I got off the table	4.4
19	s	I had a terrible hedache after	3.4
19	s	I had a bad pain in my belly	3.4
19	s	I felt faint	3.4
19	s	I didn't feel safe going home on the bus alone	4.4
19	s	I wouldn't have it done again	6.2
19	s	I was worried	1.1
19	s	I had no information	2.2
19	s	I didn't know what they were going to do to me	2.2
19	s	they shouted at me	4.2
19	s	I went to bed for 2 days	3 4
19	s	I got confused	1.1
19	s	I felt terrible	1.1
19	s	I wasn't sure what to do	1.1
19	s	It was horrible	5.3
19	s	It was worse than I imagined it could be	5.3
20	b	very helpful (staff)	4.1
20	b	they checked I was ok before I left	4.3
20	b	It decreased my anxiety as I knew what to expect	7.3
20	b	It took my worries away (booklet)	7 1
20	b	The booklet was good and helpful	7.1
20	b	I had no after effects at all	3.6
20	b	It was better than I thought - not embarrassing	5.2
20	b	staff good, very kind	4.1
20	b	I thought it'd be ok	1.2
20	b	I had the booklet- it explained it all	7.1
20	b	I was told to eat and drink normally	3.1
21	b	no-one checked before I left	4.4
21	b	It decreased anxiety- as knew what to expect	7 3
21	b	It did make me worry about the tube though	7.4

21	b	Leaflet was good	7.1
21	b	Would have it again	6.1
21	b	no after effects	3.6
21	b	It was better than I thought-the tube didn't hurt	5.2
21	b	It was silly to worry about the tube	1.4
21	b	Staff helpful and patient	1.1
21	b	Staff kind	4.1
21	b	I was a bit worried the tube would hurt	1.1
21	b	I had the leaflet-it explained it all	7.1
21	b	no aftercare instructions	3.2
22	b	I was prepared for the examination	2.2
22	b	no after effects	3.6
22	b	I like the booklet	7.1
22	b	Have family hx of Ca	1.5
22	b	they told me to go to the toilet and then home	4 4
22	b	Decreased anxiety-knew what to expect	7.3
22	b	I would have another	6.1
22	b	I was still worried about the Ca	1.5
22	b	the pictures were good- made it easier to take in	7.1
22	b	It was prob better- we all think the worst	5.2
22	b	I worried unecc as I haven't got Ca	1.4
22	b	they told me what to do	4.1
22	b	The staff were nice	4.1
22	b	It was fine	5.1
22	b	I was worried about what they'd find -Ca etc	1.3
22	b	Little booklet with appt explained it all	7 1
22	b	I was told to eat and drink lots	3.1
22	b	It explained everything	7 1
23	b	leaflet with appt described the examination	7.1
23	b	Booklet-good - knew what would happen	7.1
23	b	I'd have it again if I had to	6.1
23	b	had stomach ache-not bad-only wind	3.4
23	b	told to go home after toilet	4.4
23	b	Told to eat and drink again	3.1
23	b	It was better than I expected	5.2
23	b	I worried unecc- only had diverticulitis	1.4
23	b	I was worried I had Ca	1.5
23	b	I had blood in my stools dr ? Ca	1.5
23	b	decreased anx-better to know what to expect	7.3
23	b	the staff explained what to do	4.1