The initial testing of patients’ vision when they arrive in the eye outpatients department provides important information for the ophthalmologist. This study examines the way in which patients’ visual acuity is determined in the eye department at Kettering General Hospital and poses the hypothesis: ‘Patients who receive encouragement during visual acuity testing achieve better scores than patients who receive no encouragement.’

Literature review
An extensive literature search was carried out using books, CINAHL, Medline, PsycLit and the internet. The literature search revealed that much had been written on the reliability and the accuracy of the Snellen chart, but little was found on the human aspect of vision testing.

The use of a Snellen chart read at 6m is common practice for testing distance vision (Bruce, et al 1997). Due to a lack of space in many ophthalmic units, many areas use a half-size chart at 3m; this is a commonly accepted practice. The Snellen chart consists of heavy black letters printed on a white background. On the chart eight rows of letters in graded sizes start with a large single letter at the top then diminish gradually to eight small letters at the bottom.

‘Visual crowding’ is illustrated as a problem with the Snellen chart by McGraw et al (1995) who state that letters placed in close proximity make legibility more difficult and that letters shown singularly provide better patient performance.

However, Ricci et al (1997) state that the Snellen chart is the most widely used notation format in all English-speaking countries. Existing standards for vision testing are less than ideal and an effective ‘gold standard’ should be introduced using a controlled technique that is accessible, inexpensive and easy to perform (Enoch, 1998). Ferris and Bailey (1996) suggest that there should be standard methods for encouraging patients to guess at letters as they become difficult to read.

Few authors in the literature appear to consider the ‘human aspect’ of vision testing either on the part of the patient or the examiner. Ottar (1997) suggests that adults tend not to try as hard as children do, so patients should not be allowed to give up easily. ‘Adults should be encouraged to keep trying even if they feel that they are guessing.’ Tuckman and Sexton (1991) state that encouragement significantly improves task performance.

Sapsford and Abbott (1992) state that much research is carried out to evaluate the functioning of existing practices.

Background
It was noted from observations at Kettering eye department that although everyone worked to the hospital protocol when testing vision, nurses had very different styles of implementing it. Some nurses would say, ‘Read down the chart as far as you can please,’ and when the patient stopped reading, the vision at that point was documented. Other nurses would encourage the patient to try to read further down the chart by saying, ‘Have a try at the next line,’ or ‘Can you pick out any letters on the next line?’ It was noted that quite often the
patients did manage to read a few more letters when these extra words of encouragement were being used.

Before the research design could proceed, it was necessary to develop an operational definition of encouragement. This was devised from phrases already being used with patients, and some of the words of praise and encouragement highlighted during the literature search. For the purpose of this study the operational definition of encouragement was agreed as:

- Holding a black card under the line a patient is trying to read and pointing to the letters;
- Saying the following sentences:
  1 ‘Have a go at reading the next line’;
  2 ‘Can you pick out any letters on the next line?’
  3 ‘Have a guess at the next line’ – this was particularly used when a patient said, ‘No, I would only be guessing.’
- Offer words of encouragement and praise:
  1 ‘Well done’;
  2 ‘That was good, see if you can read any further’;
  3 ‘Brilliant, keep going’.
- Body language of looks of surprise and happiness with much smiling.

Method
This research is of the positivist paradigm. This study looked for a relationship between the use of encouragement (independent variable) and the scores of visual acuity (dependent variable).

This was a quasi-experimental study measuring two performances on the same patient. On the first test the patient was asked to read down the chart as far as they could. On the second test, when the patient had stopped reading, they were encouraged to try to read further down the chart. This was done in accordance with the operational definition of encouragement. Bonell, (1999) believes that an experimental design can be useful when comparing the different approaches that practitioners use.

Ethical issues included: informed consent; gaining permission for the study from the appropriate medical ethics committees; and ensuring that patient interests were protected at all times.

Sample
A total of 53 patients were selected by choosing every third name from the clinic lists over a period of one week – three patients did not wish to participate, which left a sample of 50 patients. An exclusion criterion was applied to those who:
- Could not see the top letter on the chart with one or both eyes – a different method is used for testing patients with less than 6/60 vision;
- Could read the bottom line of the chart – this could not be improved on;
- Could not speak English – a different chart is used for these patients;
- Were children – children’s vision is normally tested by the orthoptist;
- Had a physical disability or impairment – it was not considered ethical to have these people distressed by standing them at the vision tunnel for twice the length of time.

Although it would be impractical to include the entire study population in this research, it was considered that this method of selecting the sample was representative of the total population.

The eye condition of the patients was not taken into consideration. This study was not interested in specific eye conditions or diseases; it was simply trying to show whether patients get better visual acuity with or without encouragement.

Rigour
In an effort to maintain rigour, reliability and validity played an important part in this study. By randomly selecting patients from clinic lists, content validity was enhanced and bias was reduced. The author did all the vision testing patients with less than 6/60 vision.

The same visual acuity tunnel with the same artificial lighting was used for every patient. All patients stood at the standard 3m from the chart. The two charts were used with equal frequency first and second, and used equally with and without encouragement. It was considered that conceptual validity was informed by the operational definition.

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REFERENCES


of encouragement. When not using encouragement, the simple instruction, ‘Read down the chart as far as you can please’ was used. It was considered inappropriate to tell the patients that their performance with or without encouragement was being tested because of the fear of the Hawthorne effect (Abbott and Sapsford, 1998). They were told that different styles of vision testing were being used and evaluated and their preference was being sought. Advice was sought as to whether this was ethical and reassurance was gained from the research supervisor.

### Data collection

When the selected patient was called to have their vision tested their verbal consent was requested. They were asked to cover their left eye, or left lens of their glasses with the tissue provided and read down the chart as far as they could. This process was repeated with the other eye covered. Any vision below 6/9 was tested again using a ‘pinhole’. This is standard practice and part of the protocol.

Although the ‘pinhole’ vision was recorded, it was not used in the study. For the first test the author stood near the patient. On the completion of the first test the chart was changed. On the second test the author stood by the chart and when the patient stopped reading, held a black card under the line, pointed at the letters and used words of encouragement and praise.

### Data analysis

The scoring system used for data analysis in this study was the normal system used in the eye department at Kettering:

- If a person read H, L and O on the 6/12 line it would be scored as 6/12 – 2 because they failed to read two of the letters;
- If a person read L, N, H only on the 6/6 line it would be scored as 6/9 +3;
- If a person read L, N, H and A on the 6/6 line but not E, T and O it would be scored as 6/6 – 3;
- If a person read N, T and O on the 6/9 line it would be scored as 6/12 +3 or 6/9 – 3, which means the same.

At the end of the test the patient was asked if they preferred the style of the author standing near them or if they preferred the author standing at the chart.

This study analysed the data using descriptive statistics. The data was analysed by using Microsoft Excel and a paired sample t-test was performed using SPSS (Statistical Package for Social Scientists). These were parametric statistics.

Parametric statistical tests tend to use more simple formulae and yet they can prove more powerful than nonparametric statistical tests. When a study examines the interaction between two variables, parametric statistical tests makes for an easier assessment (Eaton (1997)).

### Results

The 50 patients comprised 30 women and 20 men. The ages ranged from 31 years to 92 years. The total average age of these patients was 71.2 years, with a female average of 71.4 years and a male average of 71 years.

Figure 1 (p39) shows the mean scores in letters seen with and without encouragement.

Table 1 compares the mean scores with the median scores. The mean is the average and the median is the central tendency. It can be seen from this table that the mean and the median scores have a similar value, this would indicate a normal distribution curve.

The paired sample t-test performed on the statistics in this study gave the following results: paired sample t-test \((t = 5.78 \text{ df}=49 \quad p<0.001)\). This suggests that there is less than a one in 1,000 probability that these results were achieved by random chance. It must be concluded from these results that the use of encouragement during vision testing makes a statistically significant difference to visual acuity scores.

Patients were asked to state their preference to ascertain whether they felt pushed or pressured while being encouraged to read more of the letters further down the chart. Davis (2001) believes that evidence alone is insufficient and that evidence needs to be ‘integrated with patients’ preferences and values’.

Figure 2 shows the results of patient preference during vision testing in this study and suggests that the majority of patients did not mind which style was used.
Discussion

The result of this study supports the hypothesis that ‘Patients who receive encouragement during visual acuity testing achieve better scores than patients who receive no encouragement.’

The literature search revealed very little information on the use of encouragement when testing vision. It was therefore important to establish a theoretical link that may explain why patients achieved better scores when encouraged.

A further literature search on communication, encouragement and nurse-patient relationships was performed. McQueen (2000) believes that how patients respond to a nurse depends on how the other is perceived in an ongoing interaction and that visual signals and emotional responses play a part in interactions between strangers. When no encouragement was used during vision testing there was very little communication or interaction with the patient.

This suggested that the reason patients were getting better results when being encouraged may be due to communication and relationship forming. Nursing literature suggests there is a strong link between relationship level and performance. Verbal prompting may also be a reason why patients performed better when being encouraged.

There are several studies, including Chang (1994) and Simmons et al (2002), which support the argument that encouragement improves patient responses. Several reasons have been suggested as to why patients may have seen better results when encouraged, however, they would all fall under the larger umbrella of communication.

Limitations

The two vision charts used in this study were made by different manufacturers and although the same light box was used, one chart did look slightly brighter than the other. One chart also had an extra letter on the 6/6 line. This could have been a problem and may have distorted the data. However, both the charts were fully alternated and rotated into use as first and second charts, with and without encouragement. The extra letter on the 6/6 line was counted in all cases. It is considered that any potential distortion was cancelled by this full rotation.

As there were only 50 patients involved in this study it would be impossible to generalise the findings to a wider population, therefore replication by other hospitals would be welcomed.

Resources were such that it was not possible to carry out a pilot study, or use a larger sample. Perhaps with better planning and the availability of more time this study could be improved, although the results of the t-test suggest the sample size was adequate.

It must also be noted that although extraneous variables were controlled as much as possible in this study there were some issues over which the author had no control. For example, would the study have achieved the same results if the tester was a man, not a woman; or if the tester had been a young person and not middle-aged? Would the results have been different if a care assistant rather than a nurse had been the tester? These issues must be taken into account when evaluating this study.

Conclusion and recommendations

The results of this study supported the research hypotheses that ‘Patients who receive encouragement during visual acuity testing achieve better scores than patients who receive no encouragement.’

The discussion offered theory-based suggestions as to why the majority of patients achieved better visual acuity scores when encouragement was used by nurses and communication appeared to be the main reason for this improvement. Communication was used as an umbrella term that encompassed nurse-patient relationships, therapeutic relationships, verbal prompting and positive feedback.

The results of this study suggest that the use of encouragement should be part of the Kettering General Hospital protocol for vision testing.

The revised protocol for vision testing has been adopted by staff and is now in place in our department. It is hoped that this will ensure that all patients are helped to achieve the best visual acuity possible.

REFERENCES

