You’ve found a piece of research that you think may be relevant to your practice but it is full of statistics and you can make neither head nor tail of them. Why do researchers bother doing statistical tests? What on earth do these statistical tests mean? We constantly use statistics in everyday life. I may, for example, state that Oxford United Football Club will probably be promoted this season. At work I may say that it takes about 30 minutes to admit a child to the ward. However, neither of these examples are particularly precise. The use of statistics allows us to make precise statements.

Statistical tests can be divided into two groups: descriptive statistics and inferential statistics. Descriptive statistics, as the name suggests, are used to describe numerical data. Inferential statistics are used to make inferences, that is draw conclusions, about the data collected. This paper will describe descriptive statistics commonly used in nursing research.

Descriptive statistics are used to help explain the results of a piece of quantitative research. Descriptive statistics summarise certain aspects of the results and can be divided into measures of central tendency which relate to the most typical value, and measures that give a measure of dispersion that is the variability or spread of the results. Descriptive statistical tests are often used when data are collected using a questionnaire and provide a picture of the issue being studied (Hicks 1996).

This paper will concentrate on statistical tests for measuring the central tendency of data. The most commonly used measures of central tendency are the mean, median and mode. The mean is what is most commonly referred to as the average. Three steps are required to calculate a mean score:

1. Count the total number of cases – in statistical terms this is referred to as ‘n’
2. Add up all the scores
3. Divide this total by the number of cases.

For example, you may have collected data relating to the peak flow readings of ten children and want to find out the mean peak flow for these children.

<table>
<thead>
<tr>
<th>Number of cases (n)</th>
<th>= 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak flow readings</td>
<td>= 220, 250, 220, 260, 270, 220, 280, 320, 250</td>
</tr>
<tr>
<td>Total (adding all the above peak flow readings together)</td>
<td>= 2290</td>
</tr>
<tr>
<td>Mean = \frac{2290}{9} = 254.44</td>
<td></td>
</tr>
</tbody>
</table>

A few very high or very low scores can have a large impact on the mean score. This is not always a problem but if you want to know what, for example, a typical score is, you may want to find out what the mid-point of a range of scores is. This is known as the median. So if we list the peak flow scores above from the lowest to the highest, in order:

220, 220, 220, 250, 250, 260, 270, 280, 320

The mid-point

The median score for this set of data is therefore 250.

The mode is the value that occurs most often. It therefore provides information about the most frequent result or response but does not necessarily provide an indication of all the responses. In relation to the peak flow results provided above the mode is 220 as this occurs more often than any of the other scores. The mode is therefore a way of averaging data by expressing the value that occurs most often.

The three measures described are all valid ways of establishing the central tendency of data. However, care should be taken to use them appropriately. The mean score can be misleading; it is affected by extreme scores (that is a score that is much higher or lower than the others) (Hicks 1996, Wright 2002). If the data being analysed contain extreme scores it may be more appropriate to use the median score. The mode should be used to answer questions such as which score occurs most often.

REFERENCES
