The language of research (part 7): research terminology — reliability

In earlier articles in this series we introduced the ideas of research paradigms and approaches to research (methodologies) and tools for collecting research data (methods) which we will continue to explore in future papers. In this article, and others interspersed throughout the series, we will stop to consider some of the words associated with research, their meaning and applicability to the research process.

Research uses language in special and unique ways, which can make it hard for people not used to the language to understand. It is important to become familiar with this language in order to understand the research you are reading and make judgements about its quality and whether or not you want to transfer the findings to practice.

These special words relate to aspects of research which may give clues as to the quality of the research process. So learning the words is not as important as understanding the concepts that they describe. Understanding research concepts is at the heart of understanding whether the research is of sufficient quality for healthcare professionals to consider adopting the research findings.

The word we will consider in this article is reliability. Reliability is important in quantitative research as it is associated with making judgements about the usefulness of the processes which are used to answer the research question. Reliability refers to whether a method used to collect data, or a way of measuring something will repeatedly give the same result if applied by the same person on more than one occasion. It may also be applied to situations where two or more people are measuring the same phenomenon and will be the measure of whether they can test the same phenomenon and achieve the same result (known as inter-rater reliability).

Qualitative researchers are not so concerned with reliability but rather with a concept called dependability. With dependability the emphasis is not on the stable and reproducible, rather it is about how the researcher responds to and makes sense of changing contexts (more on measures of quality in qualitative research later in the series).

THE IMPORTANCE OF RESEARCH QUALITY

The consistency (reliability) of a method of data collection helps ensure that the data collected are suitable to be used to generate research findings that can be generalised. One of the key purposes of quantitative research is to move from a general observation to the generation of more specific observations or outcomes. The highly specific and well-defined nature of the outcome measures (the findings of the research) means that the results of quantitative research are, on the whole, generalisable (that is, applied with a fair degree of certainty outside of the research setting).

It is important to have faith in the findings of research particularly as research findings may be used to guide practice. What we really need from evidence for practice is faith that what has been shown in the research setting will work in the clinical setting (Ellis, 2013). Think of it like this, every time we use a sphygmomanometer in the clinical setting we want to be certain it will give an accurate reading of the patient's blood pressure regardless of how many times we as individuals take it (allowing for natural variability). We also want to know that it gives an accurate reading regardless of who uses it — assuming people apply the cuff in a broadly similar way and the patient is at rest for a similar amount of time before using it.

Consistency of data collection, whether within a research project or in clinical practice, is not always that easy to attain. For example, two nurses assessing the same patient may have widely divergent views as to what is wrong with them. This is a result of normal human variation. The impact of this variability on data collection for research purposes may mean that an element of bias (see 'mistruth' later in the series) is introduced and therefore the finding may not be safely applied to clinical practice as we cannot safely generalise from them. This

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means that there need to be safeguards in place within the research process, especially when more than one person is collecting data.

WHAT IS RELIABILITY?

Gerrish and Lacey (2006) define reliability as "the consistency of measurement within a study". They give the example of a set of scales which weigh the person at a different weight at two times of the day being unreliable. If one considers what this means, one can understand how many researchers refer to reliability in terms of repeatability, that is how consistently a measure provides the same result when it is repeated.

One of the best ways of understanding reliability is to consider stability which is one component of reliability. Stability is a measure of how reliably a tool scores the same when used repeatedly on the same subjects (Polit and Beck, 2008). This may be demonstrated using test-retest reliability procedure which is a process where the researcher takes a measure or administers a tool (a questionnaire for example) to the same subjects at different times. A highly reliable tool will gain close to an identical result and vice versa.

INCREASING RELIABILITY IN RESEARCH

Reliability in the research sense refers very much to the ability of a measure to come out with the same result no matter how many times it is applied. In any study this is important so any good paper will identify how this is achieved. For example, in a study where data are collected by more than one person, the researchers are trained to collect data in a standard way using set criteria which are applied in a consistent manner. This will increase the inter-rater reliability. Tools such as those used to measure quality of life are extensively and repeatedly tested to ensure they gain consistent answers, this serves to increase the reader's confidence not only in the reliability but also in the validity of the findings of a study.

Inter-rater reliability measures whether two or more people can investigate the same phenomenon and be able to acheve the same result.

CONCLUSION

We have explored the notion of reliability and have described how reliability refers to the reproducibility or repeatability of a measure used in quantitative research. We have seen this measure is important in providing evidence of the usefulness of the findings of research in terms of their applicability and generalisability to the wider population.

Perhaps the main reason a wound care professional needs to be certain about the quality of the research they read is that they may choose to use research to inform their clinical decisionmaking. Understanding reliability is therefore a prerequisite of good evidence-based practice. **Wuk**

REFERENCES

Ellis, P (2013) *Evidence Based Practice for Nurses. (2nd edn).* Learning Matters, Exeter

Gerish K, Lacey A (2006) *The Research Process in Nursing. (5th edn.* Blackwell, Oxford

Polit DF, Beck CT (2008) *Nursing Research: Generating and Assessing Evidence for Nursing Practice.* Wolters Kluwer/Lippincott Williams and Wilkins, London