Examining the validity of pressure ulcer risk assessment scales: developing and using illustrated patient simulations to collect the data

DINAH GOULD BSc, MPhil, PhD, RGN, RNT, Cert Ed, DipN
Professor of Nursing, Faculty of Health, South Bank University, 103 Borough Road, London SE1 OAA, UK

DANIEL KELLY BSc, MSc, RGN, NDN, Cert Onc, Cert PGCE, RNT
Senior Nurse (Research & Development), UCL Hospitals, London, UK

LEN GOLDSTONE BA, MSc, FSS
Visiting Professor of Health Services Research, Faculty of Health, South Bank University, 103 Borough Road, London SE1 OAA, UK

JOHN GAMMON BSc, MA(Ed), MPhil, PhD, RGN
Principal Lecturer, Swansea Institute of Higher Education, Townhill, Swansea, UK

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Summary

• Simulations are of particular advantage in research studies where large samples are necessary to achieve statistical power and the information must be collected under uniform conditions in order to aid interpretation.

• In the study reported below, simulation was achieved through the use of medical photography accompanied by case studies of the same patients. All information was collected on the same day. The purpose of the study was to determine the validity of the three pressure ulcer risk assessment scales most commonly used in clinical nursing practice in the UK.

• Each clinical nurse assessed the same four patients using three risk assessment scales and a visual analogue scale designed to capture their own clinical judgement. External validity was assessed by a panel of tissue viability experts who provided independent ratings.

• Data were obtained from 236 clinical nurses, yielding 941 risk assessments.

• Experience with this approach to data collection suggests that it requires careful planning. This should include measures to ensure that the simulated information is valid and that all data collectors have been adequately trained and are able to motivate the nurses participating in the study. Providing
consideration is given to these issues, the use of simulation can help to collect data that would be difficult to obtain by more conventional means. It is also important to recognize that clinical decisions are de-contextualized in simulations because they are reduced to verbal and visual summaries. The decision to use simulations should thus be taken only if this is acknowledged.

**Keywords**: pressure ulcers, pressure ulcer risk assessment scale, simulations, vignettes.

**Introduction**

Despite advances in practice, pressure ulcers remain a source of concern to health professionals and distress to patients and their families. Those providing care for people with compromised tissue viability face a major challenge because pressure area care is not currently underpinned by a sound evidence base (National Health Service Centre for Reviews & Dissemination, 1995; Gould *et al*., 2000). Current procedures used to determine which patients are particularly at risk of developing pressure ulcers have been questioned because the validity and reliability of risk assessment scales is debatable (Clark & Farrar, 1992; Edwards, 1995; Cook *et al*., 1999). Thus there is at present little way of swiftly yet accurately determining which patients should receive expensive pressure-relieving interventions and those for whom less intensive care is adequate. Research to identify risk factors has always been hampered by the need for large samples in order to achieve the necessary statistical power (Lyne *et al*., 2000). The purpose of this paper is to explore the use of illustrated patient scenarios as a form of simulation to determine the validity of the three risk assessment scales most commonly used in clinical nursing practice in the UK. Use of this method was associated with numerous advantages that have been documented in the literature; namely the ability to collect data expeditiously with large groups of respondents, to overcome many of the problems inherent in observational studies and to manipulate more than one variable at a time (see Lanza, 1990). However, a number of unexpected challenges were also encountered. It became clear that any large-scale, complex study involving simulations would require careful and time-consuming preparation and would therefore be expensive.

It is important to emphasize these potential drawbacks because experience in supervising undergraduate and postgraduate nursing students has suggested that they are attracted to this approach because it has been perceived as an inexpensive, relatively swift and straightforward means of obtaining data for research projects. In addition, the contextual dimensions of clinical practice are also excluded from simulated scenarios, an issue which may limit the appropriateness of this approach.

**Background**

A simulation is a representation of a real event (Chambers Twentieth Century Dictionary, 1980). In research studies, written descriptions of particular incidents or situations have been used to elicit respondents’ knowledge, opinions or to derive an understanding of their attitudes based on how they state they would behave in the hypothetical circumstances depicted (Lanza, 1990). These written descriptions are called vignettes and most of the limited literature which has examined data collection using this approach has related to verbal simulation (see for example Taylor *et al*., 1984; Lanza, 1988; Fothergill-Bourbonnais & Wilson-Barnett, 1992; Forrester & Murphy, 1992).

Such written accounts have been used by social scientists and anthropologists since the 1950s, but in nursing research studies they appear to have been used only occasionally, chiefly to obtain data pertaining to the attitudes or beliefs held by nurses towards a particular client group or to elicit information about the way they would respond in a difficult situation (Gould, 1996). Their use in these circumstances is predictable given the amount of nursing literature which has been concerned with the ‘unpopular patient’ and the challenge of persuading members of the caring professions to explore reasons for negative stereotyping (Stockwell, 1972; Podrasky & Sexton, 1988).

The use of vignettes confers numerous advantages, especially those related to the practical and ethical dilemmas of obtaining data in the clinical setting. For example, Gould & Wilson-Barnett (1996) assessed nurses’ knowledge of infection control by presenting respondents with two vignettes and asking them to outline the nursing actions they would take when providing care for a patient with a staphylococcal infection and a parenterally spread disease. In studies of this type, vignettes appear to offer a feasible alternative to observation, which is the traditional method of obtaining data about behaviour. Benefits have
been reported to include: the ability to collect information simultaneously from large numbers of respondents; the ability to manipulate a number of variables all at once in a manner that would not be possible in the clinical situation; the absence of observer effect; and the avoidance of the ethical dilemmas commonly encountered during research with vulnerable patients (Lanza, 1990; Gould, 1996). In contrast, observational studies involve data collection from respondents in a range of different situations and at different intervals of time so the information obtained for the overall sample cannot be standardized (Gould, 1996). Observational studies, however, have the advantage of allowing contextual issues to be described in greater depth.

Some authors have used simulations to collect data without questioning whether or not they yield valid or reliable information (see Karlsson et al., 2000). However, the methodological challenges of the approach have been considered by a few authors. One of the main issues is ensuring that the situation depicted in a scenario is a genuine reflection of real life. Thus Flaskerud (1979) recommends that each simulation and the questions asked in relation to it should be scrutinized by an independent panel of experts in the subject to provide a measure of external validity. The transferability between academic and theoretical expertise and the level of clinical performance of ‘experts’ in the real world, however, can never be fully determined using this approach. Lanza (1990) points out that the control of extraneous variables is possible when scenarios are used because every participant reacts to the same stimulus (the situation depicted in the scenario and the questions asked in relation to it). The rate of response from nurses participating in these studies is high (Taylor et al., 1984). The use of scenarios has been acceptable to nurses in previous studies and because the recruitment of groups of individuals is possible (after hand-overs, during study days), data collection should be relatively swift and expedient (Gould, 1996).

A recent development in the use of the vignette as a data collection tool has been the incorporation of illustrations, usually photographs, to promote information about how clinical decisions are made. This is proving particularly attractive to authors in the field of tissue viability because of the difficulty of obtaining sufficiently large numbers of patients in any one clinical setting to form a sample of the required size (Lyne et al., 2000).

**Simulation studies and pressure ulcers**

Healey (1995) examined the inter-rater reliability of three different scales to grade established pressure ulcers. In this study, photographs of 10 different pressure ulcers were prepared and shown to a convenience sample of 109 clinical nurses employed in seven different trusts. The data were collected by the tissue viability nurses employed in each. The amount of preparation they received for their role as data collectors appears to have been limited because some data were lost through a clerical error. Each clinical nurse graded the 10 ulcers using one of the three scales, then their results were compared. Inter-rater reliability was highest for the most severe ulcers, irrespective of which grading scale was used. However, significantly different gradings were indicated for the same photograph with each of the three different scales. A possible criticism of the study, recognized by the author, was that each nurse used only one scale to grade the photographs instead of all three. This procedure might have accounted for the differences in inter-rater reliability observed. Healey’s study cannot therefore be considered to have been well-controlled. Certainly one of the major opportunities of using simulations, namely the ability to manipulate several variables simultaneously (Lanza, 1990), was lost. The use of photographs rather than real patients was also considered a possible reason for the poor levels of inter-rater reliability obtained, not because the quality of the photography was in doubt, but because the nurses were aware that they depicted pressure ulcers, whereas in the clinical situation, they would first need to decide whether a lesion had indeed been caused by pressure or could be attributed to another factor.

Lamond & Farnell (1998) used photographic illustrations in a more qualitative approach intended to determine how nurses use and organize their knowledge when making clinical decisions about the treatment of established pressure ulcers. This was a small-scale simulation study involving a convenience sample of only 14 nurses. The ability of ‘experts’ (with more than 3 years experience) was compared to that of novices. The nurses were given photographs of eight different pressure ulcers, each accompanied by some written information, and asked to match each against eight cards. Each card displayed one of the wound dressing protocols used in the health care trust where the nurses were employed. They were asked to give the reasons for their decisions in an interview which was audio-taped and transcribed. Despite its small sample, this study represents an advance over that by Healey (1995) because there was an attempt to obtain a measure of external validity. The nurses’ decisions were compared to a ‘gold standard’ decision formulated by a panel of two tissue viability experts. Experienced nurses were more likely to make decisions which matched those of the expert panel than less experienced nurses. In addition, the expert panel had drawn up the information accompanying the
photographs and determined the optimum treatment for each pressure ulcer as recommended by Flascherud (1979). Once again, however, the context of the care setting was not considered at this point.

Aim

The aim of the study described below was to examine the concurrent criterion validity of the Norton Score (Norton et al., 1962), the Waterlow Score (Waterlow, 1985) and the Braden Scale (Bergstrom et al., 1987) by establishing whether their estimations when used by clinical nurses were congruent with the degree of risk independently agreed by the consensus view of an expert panel of tissue viability specialists. The results from the three risk assessment scales were also compared to the nurses’ own clinical decisions assessed on a visual analogue scale. The three risk assessment scales were selected because they are most commonly used in clinical practice in the UK and are the most well-known.

Simulation exercises were of particular interest to the research team because it was recognized from the outset that a substantial sample would be needed to provide the required information. Power analysis indicated that to provide adequate power at the conventionally accepted level of 0.80 (Ingram, 1998), a sample of at least 200 nurses would be necessary. Collecting the data by conventional means using real patients was clearly not feasible; it would not be possible and certainly not ethical for 200 nurses to examine the same few patients over such a short period of time. Long intervals between observation by the nurses would not provide reliable data because the patients’ risk status could alter through changes in condition or treatment (Defloor, 1999) or the same patients might no longer even be available. A simulation exercise would also be advantageous because it would allow several variables to be manipulated at once, as recommended in the literature (Lanza, 1990). For instance, by recruiting sufficient numbers of nurses with different qualifications and experience and different patient scenarios, it would be possible to establish any differences in the ability to detect risk when using the three risk assessment scales for different patients in terms of the nurses’ clinical experience, professional education, qualifications and their familiarity with any particular risk assessment scale. This information was considered desirable because decision making in nursing is thought to be affected by levels of specialist knowledge and familiarity with the clinical setting (Watson, 1994; Edwards, 1998), particularly in relation to pressure ulcer care, as discussed above (Lamond & Farnell, 1998).

In order to increase the generalizability of the study findings, data collection was planned with nurses employed in three different geographical localities (inner London, south-east London and a rural locality) and different clinical settings (general medical wards, general surgical wards, orthopaedics, elderly care, critical care and the community). It was planned to include at least 30 respondents in each of these groups to investigate the effects of the independent variables (Coolican, 1994).

Study design

The study took place in two phases. The first phase involved developing and establishing the external validity of the illustrated patient scenarios. This part of the study was lengthy, time-consuming and expensive because of the need to develop and reproduce sufficient numbers of high quality photographs to collect data simultaneously with several groups of nurses in each of the three different localities.

In the second phase a sample of clinical nurses used each of the three risk assessment scales to rate the risk of pressure ulcer development for the patients depicted in each of the illustrated scenarios. They were also asked to identify each patient’s degree of risk according to their own clinical judgement on a visual analogue scale and to complete a supplementary data collection form to obtain the additional data.

DEVELOPING THE ILLUSTRATED PATIENT SCENARIOS

Content validity was established by developing the scenarios from the case histories of existing patients. The two researchers leading the project visited the wards of an acute hospital trust accompanied by a medical photographer. His role was to ensure that the images would be captured and developed to the high standard necessary in the clinical assessment of wounds and other skin conditions (Swann, 2000). The ward staff were asked to indicate which patients would be able to provide written consent. They were then approached by the researchers, who explained the nature of the study and obtained the patients’ verbal and written consent. Photographs of the sacral area were then taken by the medical photographer. The sacrum was selected as the most appropriate area for examination because it is the site at which pressure ulcers most commonly develop (Torrance, 1983). Details from the patients’ case notes were obtained with permission on the same day. General information about the patient and their condition was provided in each scenario, with care

taken to ensure that details considered in the literature to place the individual at risk of pressure damage were incorporated. The amount of information included in each scenario was carefully standardized. For example, age, weight and the build of each patient were recorded in all cases and information about medication was always given. Each photograph with its accompanying written details was transposed on to a laminated card. The patients were all given pseudonyms. Initially six scenarios were developed. This was surplus to the study requirements (see below).

**ESTABLISHING THE VALIDITY OF THE ILLUSTRATED PATIENT SCENARIOS**

This part of the study took place in two stages. Firstly a tissue viability expert was asked to examine each of the six illustrated patient scenarios to determine whether the photography was of a sufficient standard to permit clinical interpretation and whether the accompanying case studies were sufficiently detailed for the nurses to identify risk. The results were positive.

In the second stage, the advice of an expert panel was used to provide external validity as recommended by Flaskerud (1979). A panel of three tissue viability experts was established. All were known for their work in this field nationally and one had international recognition. All had published widely and had extensive clinical experience. Each expert independently rated each of the patients depicted in the six scenarios from 1 to 10 on a visual analogue scale (VAS) according to their risk of developing a pressure ulcer.

Scores from the visual analogue scales provided by the expert panel were keyed into the computer and analysed using the Friedman Exact Test. This is used to undertake non-parametric analysis of a randomized block experiment and is an alternative to the two-way analysis of variance which is recommended for use only with interval, normally distributed data (Siegel & Castellan, 1988). The result showed no statistically significant differences between members of the panel. Thus there was a consensus of agreement among the experts and their judgement which could be used to provide a measure of external validity against which to judge the ratings made by the clinical nurses.

Four of the six scenarios were selected by the research team to represent the most comprehensive range of risk. The use of three scenarios was avoided because it might have encouraged the nurses to think that one patient should be regarded as high risk, one medium risk and one low risk. The patient groups eventually represented were diverse: patient A was a general medical patient; patient B was a young cancer patient; patient C was receiving orthopaedic treatment and patient D had just been admitted from the community – she was elderly and had a history of sudden unexplained weight loss.

Each of the illustrated patient scenarios finally selected for use as a data collection instrument was reproduced 50 times to allow simultaneous data collection with groups of nurses in the three different localities.

**PREPARATION OF THE DATA COLLECTORS**

It was intended that data collection should take place with the nurses in groups, because this is one of the chief advantages of simulation exercises (Taylor et al., 1984). Members of the research team intended to collect as much of the data as possible, but it was recognized from the outset that they would not have the time or resources to do so. Thus a team of data collectors were enlisted to help. They required careful preparation to ensure that no data were lost and that all the information was obtained under the same conditions so that it would be comparable. For example, if nurses in the different groups commented on any perceived gaps in the information provided in the illustrated scenarios, the data would not have been comparable if one group had been given suggestions which another group did not receive.

**DATA COLLECTION WITH THE CLINICAL NURSES**

Data collection always took place with the nurses in groups. Each nurse was given a pack containing a written explanation of the study with instructions, a consent form, the four illustrated patient scenarios, the three risk assessment scales and the visual analogue scales. A supplementary data collection form was used to obtain the following details: number of years since registration; professional qualifications; clinical grade; the clinical setting in which the nurse was currently practising; and the number of years they had been employed there. They were also asked to indicate which, if any, risk assessment scale they had used in clinical practice.

The nurses were asked to rate the patient depicted in each of the four scenarios on each of the three risk assessment scales and on a visual analogue scale according to their own clinical judgement. A verbal explanation of the project was always provided before the nurses were given the packs. They were told that participation was voluntary and anonymity was assured.

This exercise was completed under the supervision of a member of the research team or one of the trained data
collectors in order to minimize discussion among the nurses and the sharing of opinions, which could lead to contamination of the responses. Because the illustrated patient scenarios had been transposed on to individual laminated cards it was possible to present each scenario and each risk assessment scale and visual analogue scale to the nurses in randomized order. This reduced the effect of systematic bias from the preceding score to the next and from one scenario to the next.

ETHICAL CLEARANCE

Ethical clearance was granted from the health care trust where the information to construct the patient scenarios was obtained and from the trusts where the nurses participated in data collection.

PILOT STUDY

A pilot study was conducted with six nurses in one trust. Its purposes were: to ensure that the instructions in the data collection packs were clear and could easily be followed; that the required data would be obtained; and that data collection would not take an excessive amount of time. Data collection took 30 min and no problems were encountered. During the pilot study the opportunity was also taken to obtain feedback about the nurses’ reactions to using the illustrated patient scenarios. They regarded the written information as adequate but found patient D the most difficult to assess on the grounds that she was considered a community patient and none of them had experience in this setting. The photographs were considered to reveal the condition of the patients’ skin well, but just looking at one area (the sacrum) instead of the whole person was considered artificial, as was the lack of opportunity to obtain information about skin tone or elasticity by touching. It also became apparent at this stage that the illustrated patient scenarios could not entirely compensate for the holistic skills which are applied in practice (Benner & Tanner, 1987).

Analysis

Data from the supplementary data collection forms were coded and together with the numerical scores for each of the risk assessment scales and the visual analogue scale scores from the nurses and the expert panel, were keyed into the computer. The overall score obtained with each risk assessment scale was categorized according to whether the assessment indicated risk, medium risk, high risk or very high levels of risk according to the numerical cut-off points suggested by the authors of the risk assessment scales. The study findings will be published separately. The discussion presented below focuses on the success of simulation in obtaining the data for the study and the associated limitations and pitfalls which became apparent as the study progressed.

Discussion of the method

The study would not have been possible for practical and ethical reasons if data collection had been attempted with real patients. Using simulations, however, data were obtained from 236 clinical nurses, yielding 941 individual assessments (see below). The use of the illustrated patient scenarios helped to promote data collection in a number of other important ways, including: stratification of the sample; the roles of the expert panel and the data collectors; and lastly, the ability to fully exploit the method to provide standard information from the respondents while simultaneously manipulating key variables (Lanza, 1990; Gould, 1996). Sound organization and preparation were essential in achieving this success, overcoming some of the problems which resulted in loss of data in the paper by Healey (1995). Nevertheless, the study is open to a number of criticisms which also need to be addressed.

SAMPLE

Issues relate to the sample of patients used to develop the illustrated scenarios as well as the nurses who assessed them.

The manner in which the patients were recruited to the study is open to criticism. The patients were all recruited from the same hospital for reasons of convenience, thus introducing bias. Moreover, the ward staff indicated suitable patients who would be able to give informed consent. Thus some of the most ill patients, who were probably at greatest risk of developing pressure ulcers, were excluded because they would not have been in a position to give consent. Random inclusion of patients would have been desirable; this is reflected through the consideration of patient D. The difficulty of assessing this particular patient occasioned much comment, as it had in the pilot study. Patient D seemed problematic irrespective of the method of risk assessment employed. Inspection of the data suggests that holding a community nursing qualification did not allow respondents to assess this patient any more effectively than those not holding such a qualification, an outcome which may indicate that nurses’ skills of assessment may not be related to traditional measures of expertise such as professional qualifications. It
is also possible that some patients are genuinely more difficult to assess than others, a situation which does not appear to have been identified elsewhere in the literature. A larger, randomly obtained patient sample would help to determine whether patient D is unusual in this respect or whether such patients are in fact commonly encountered. It is unlikely that difficulties in assessment relate to a lack of key information in the scenario, which is generally considered important in making clinical judgements because the information provided for each patient had been standardized. It should be remembered, however, that simulations can never capture the richness of situational information which nurses will encounter in the clinical setting (Benner & Tanner, 1987).

Despite these imperfections, the use of simulation allowed data to be collected from a sample of the size required to answer the research question (Ingram, 1998). Assessments were obtained from 236 clinical nurses effectively stratified between the three geographical localities and with at least 30 respondents in each category (for example, clinical grade, experience) to permit secondary analysis (see Coolican, 1994). Moreover, there was very little loss of data; two Waterlow assessments and one Norton assessment were missing. Thus 941 individual assessments became available for analysis. The use of carefully trained data collectors promoted this high rate of compliance. The use of simulation therefore appears to have been justified despite the time and expense involved in producing the illustrated patient scenarios. This included: completing two different ethics applications; administration associated with setting up the production of the scenarios; an entire day devoted to production (two researchers and the medical photographer); a visit to obtain and check the quality of the initial photography; three further visits to the medical photography department to answer specific queries related to production; and all the administration involved with arranging for the expert panel to provide external validity before data collection could even begin.

EXPERT PANEL

The expert panel provided a measure of external validity (Flaskerud, 1979). This was essential to the project and was taken a stage further than in the study by Lamond & Farnell (1998) in that a statistical measure of validity was obtained. Nevertheless, the manner in which the expert panel was recruited is still open to some criticism. The experts were selected, not randomly approached, from a larger population of such experts across the UK. This approach was rejected on the grounds that it would have been too time-consuming and fraught with potential problems: no national database of tissue viability experts exists and those approached could have refused. However, the expert assessments were obtained independently and their visual analogue scale estimations in each case agreed. Therefore it could be argued that, despite the lack of objectivity in selecting the expert panel, their clinical decision making was sufficiently robust to provide a meaningful measure of external validity.

DATA COLLECTION TEAM

The motivation and enthusiasm of the research team and the data collectors was of major importance throughout the study and contributed to its success in a number of ways, not least the procurement of such a large and complete data set. One potential drawback of the study was the amount of work involved for the clinical nurses, who were each asked to make 16 separate patient assessments. However, no negative comments were reported. The nurses appeared to be genuinely interested in the study and curious about the eventual findings and their implications for clinical practice. This supports the findings of earlier authors, who have reported that participation in simulation studies is acceptable to clinical nurses and may be an important contributory factor in their success (Taylor et al., 1984).

The careful preparation of all the data collectors prompted them to record and report back comments made by the clinical nurses. They frequently remarked on the difficulty of using the Braden Scale compared to the other two risk assessment scales, but offered no comments about the visual analogue scale, despite the novelty of this method in risk assessment. This finding has considerable implications for risk assessment in view of claims that the Braden Scale has greater validity than the other risk assessment scales commonly used (Bergstrom et al., 1987), thus encouraging its incorporation into clinical practice (see for example Hopkins et al., 1998).

The use of carefully trained data collectors was also an advantage in that it allowed the collection of a uniform data set because all the clinical nurses responded to the same stimulus (the scenario) under conditions that were very similar. There was no feedback indicating any unplanned changes in the data collection procedure.

EXPLOITATION OF THE METHOD

The study was more complex than others concerned with simulation to collect data relating to tissue viability (Healey, 1995; Lamond & Farnell, 1998) because a
number of variables (the details of each patient, background and qualification of the nurses) were manipulated simultaneously. The value of the method in providing uniform information about each patient to each assessor was clearly illustrated when members of the research team glimpsed patient A 1 week after she had been photographed; her condition had visibly deteriorated. Thus any risk assessment conducted at this time would have been rated quite differently. Assessment of every patient by every nurse will certainly avoid the difficulty highlighted by Healey (1995) in determining inter-rater reliability, and will therefore contribute towards clear interpretation of the findings when they become available.

Conclusion

Simulation can be recommended as a method of data collection in studies where large samples are necessary. Moreover, it offers additional advantages in that the method allows numerous variables to be manipulated under conditions that are held standard. From the evidence in the literature and experience in conducting the above study, it appears that both written and illustrated simulations can be used to obtain information about opinions, attitudes, behaviour and clinical decision making. It has particular appeal when exploring the vexed issue of pressure area care and the treatment of established pressure ulcers, where its use has now permitted a number of imaginative studies (Healey, 1995; Lamond & Farnell, 1998) concerning topics where sound additions to the evidence base have been wanting for some time (National Health Service Centre for Reviews & Dissemination, 1995; Gould et al., 1999). However, data collection with any simulation, whether it incorporates illustrations or not, does not offer a ‘quick fix’. Use of the method requires careful planning to include a robust measure of external validity, high levels of motivation on the part of the data collectors and the ability to encourage respondents to take part in what can be a demanding and onerous data collection procedure. When using this method its limitations should also be balanced against its advantages. These include the fact that clinical decisions are de-contextualized because they are reduced to verbal and visual summaries. The decision to use simulations should thus be taken only if this is acknowledged.

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References


Methodological issues in clinical research


INFORMATION POINT: Visual Analogue Scale (VAS)

A Visual Analogue Scale (VAS) is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured. For example, the amount of pain that a patient feels ranges across a continuum from none to an extreme amount of pain. From the patient’s perspective this spectrum appears continuous – their pain does not take discrete jumps, as a categorization of none, mild, moderate and severe would suggest. It was to capture this idea of an underlying continuum that the VAS was devised.

Operationally a VAS is usually a horizontal line, 100 mm in length, anchored by word descriptors at each end, as illustrated in Fig. 1. The patient marks on the line the point that they feel represents their perception of their current state. The VAS score is determined by measuring in millimetres from the left hand end of the line to the point that the patient marks.

How severe is your pain today? Place a vertical mark on the line below to indicate how bad you feel your pain is today.

No pain [________________________________________] Very severe pain

Figure 1 Effects of the interpersonal, technical and communication skills of the nurse on the effectiveness of treatment.

There are many other ways in which VAS have been presented, including vertical lines and lines with extra descriptors. Wewers & Lowe (1990) provide an informative discussion of the benefits and shortcomings of different styles of VAS.

As such an assessment is clearly highly subjective, these scales are of most value when looking at change within individuals, and are of less value for comparing across a group of individuals at one time point. It could be argued that a VAS is trying to produce interval/ratio data out of subjective values that are at best ordinal. Thus, some caution is required in handling such data. Many researchers prefer to use a method of analysis that is based on the rank ordering of scores rather than their exact values, to avoid reading too much into the precise VAS score.

Further reading


NICOLA CRICHTON