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Confidence and clinical judgement in community nurses managing venous leg ulceration – A judgement analysis

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ABSTRACT

Background: The variation in the management of venous leg ulceration in the UK is partly attributable to an uncertain clinical environment but the quality of judgements is influenced by the how well nurses' confidence and accuracy are aligned.
Objectives: To assess UK community nurses' confidence in the accuracy of their diagnostic judgements and treatment choices when managing venous leg ulceration.
Design: Judgement Analysis.
Setting: UK community and primary care nursing services.
Participants: 18 community non-specialist nurses working in district (home) nursing teams and general practitioner services and 18 community tissue viability specialist nurses.
Methods: Using judgement analysis methods, 18 community non-specialist nurses and 18 community tissue viability specialist nurses made diagnoses and treatment judgements about compression therapy for 110 clinical scenarios and indicated their confidence for each judgement. An expert panel made consensus judgements for the same scenarios and these judgements were used as a standard against which to compare the participants. Confidence analysis was used to assess the nurses' confidence about their diagnostic judgements and treatment choices.
Results: Despite being very experienced, both non-specialist nurses' and specialist tissue viability nurses' levels of confidence were not well calibrated with their levels of accuracy.
Conclusion: The results of this study are important as errors resulting from both over and under-confidence at the diagnostic phase of management may influence treatment choices, and thus increase the chances of treatment error.

1. Background

The management of leg ulcers is a complex and resource-intensive activity for community nurses [1]. Leg ulcers - non-healing wounds on the lower leg - are mostly due to venous insufficiency causing blood to pool in the lower leg. Some are caused by arterial insufficiency preventing sufficient blood reaching the skin of the lower leg. Other are due to a combination of both venous and arterial problems or complications due to other co-morbidities [2,3]. The optimal (and safest) treatments depend on being able to appropriately diagnose the cause(s) of a leg ulcer.

For venous leg ulceration uncomplicated by arterial disease, compression therapy is effective in promoting healing [4] but it is dangerous for patients with arterial or mixed leg ulcers as it further reduces the amount of blood getting to the skin. Research suggests that community nurses are less accurate than they could be when diagnosing and choosing treatments for venous leg ulcers [5] and many people do not receive a diagnosis of the cause of their leg ulceration [1]. The management of leg ulcers is an exemplar of a clinical problem surrounded by “irreducible” uncertainty: imperfect information often imperfectly presented and partially dependent on the information seeking skills of the clinician. Such skills are affected by clinicians' levels of confidence in the correctness of their clinical judgements.

Being over-confident or under-confident are features of clinical decision making [6,7]. Clinicians with high confidence in a judgement are less motivated to seek more information to confirm or

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deny that judgement [8] or use information support systems such as practice guidelines [9]. This can lead to inaccurate diagnostic judgements and inappropriate treatment choices. The literature suggests that experienced nurses have a tendency towards overconfidence [10–12]. Clinicians with low confidence in a judgement may seek the advice of clinicians with more expertise [13] which can delay care and have resource implications through inappropriate referrals.

2. Methods

2.1. Aim

The aim of the study was to assess UK community nurses' confidence in the accuracy of their diagnostic judgements and treatment decisions as to whether or not to apply compression to treat leg ulceration.

2.2. Theoretical framework and research design

This study was nested within a judgement analysis which has been previously reported [5,14]. The judgement analysis compared the accuracy of the diagnostic judgements and treatment choices of UK community tissue viability specialist nurses and non-specialist nurses managing venous leg ulceration. Judgement analysis starts from the premise that the accuracy of a judgement depends on the judge's (i.e. nurse's) use of information present in a judgement environment and the uncertainty present in that environment [17]. This theoretical model can be portrayed as a form of lens in which the nurse's judgement "focuses" the information contained in a clinical situation (Fig. 1 – Supplementary data).

The left side in this model represents the 'ecology' or true state (e.g. the 'correct' diagnosis). Various information cues are linked to this side of the model (such as the appearance of the ulcer) and each cue carries a weight in terms of the contribution (importance) made to the judgement. The right side of the model represents the nurse's judgement of the situation (their diagnosis). A more detailed description of the component parts of a lens model can be found in the previous report of the judgement analysis [14]. The relationship between the cues and the judgment and the cues and the ecology [15] is modelled using multiple regression. The lens model equation presents achievement in terms of accuracy (Ra) as a function of modelled knowledge (G), predictability (Re), cognitive control (Rs) and unmodelled knowledge (C).

2.3. Setting

Six UK primary care trusts in the north and south of England.

2.4. Ethical considerations

Research governance approvals were granted by local NHS research governance committees and ethical approval was provided by University and local NHS ethics committees (REC Ref No 09/H1311/86).

2.5. Construction of the judgement task

The judgement task sought to mirror the UK prevalence of different types of leg ulceration [2,3]. The clinical records of 53 patients with venous leg ulceration and 33 patients with mixed/arterial leg ulceration were randomly sampled from a trial data set [16]. The records of 4 patients with ulcers of unusual aetiology were non-randomly selected from community nursing caseloads. Twenty records were replicated to achieve a total of 110 leg ulcer patient scenarios which were presented sequentially to form the judgement analysis task [17].

The judgement criteria and weights in the left (ecology) side of the Lens Mode were generated using nominal group consensus methods [18]. Four community tissue viability specialist nurses with advanced knowledge and experience in managing leg ulceration from four different healthcare organisations formed a consensus panel. These nurses independently completed the online survey then these data were examined before the consensus meeting to identify areas of agreement and disagreement. At the consensus meeting the nurses were presented with their range of answers for each scenario and asked to agree a group answer. Complete agreement was reached for each scenario. A previous publication [5] gives a more detailed description of the construction of the judgement task.

2.6. Participants

The participants were registered nurses responsible for the care of at least one community-based patient with leg ulceration at the time of the research, or the care of at least two patients within the previous three months. These are the same participants as those in the previously reported judgement analysis [5].

The nurses were designated as specialist or non-specialist according to their job title. Tissue viability nurses were classified as 'specialist' while nurses working in general/family practice and district/home care nurses were classified as 'non-specialist'. Data relevant to nurse decision making [19] and confidence [20–23] such as length of experience, level of education, knowledge, seniority, degree of clinical autonomy, and peer nomination as experts, were collected from all participants.

2.7. Sample size

A sample size calculation was undertaken to identify the number of participant nurses required. The study was powered to have an 80% chance of identifying a clinically significant difference in judgement accuracy of 0.2 in accuracy (Ra) between the two groups of nurses [24,25]. An effect difference of 0.2 would mean that an average tissue viability nurse would score higher (i.e. be more accurate) than 58% of the non-specialist nurse group [26]. The calculation indicated a desired sample size of thirty eight participants with 19 participants in each group.

2.8. Data collection

The judgement analysis task of 110 scenarios containing key information that was deliberately variable was presented using an on-line survey tool (surveymonkey.com). Each nurse participant was asked to independently make a diagnostic judgement about the type of leg ulcer and a treatment decision as to whether or not to offer compression therapy. The participants were also asked to rank their level of confidence about the 'correctness' of each diagnosis and treatment judgement using a 1–10 Likert scale where '1' indicated 'not confident at all' and '10' indicated 'very confident'. The data were gathered in 2011 and 2012.

2.9. Data analysis

Confidence calibration techniques were used to analyse the relationship between the participant's confidence in their judgement or decision, and their level of judgement accuracy [27–29]. Scatter plots of proportion of "correct" judgements (i.e. performance) with expressed confidence in performance [31] were used

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