Supporting nurse decision making in primary care: exploring use of and attitude to decision tools

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Abbreviations used

Body Mass Index (BMI)

Chronic Disease Management (CDM)

Cognitive Continuum Theory (CCT)

Electronic Patient Record (EPR)

General Practitioner (GP)

Abstract

Nurses are increasingly working more autonomously in extended roles, yet we know little about the nature of the decisions they make. Decisions vary in terms of complexity, ambiguity and presentation, and the nature of the decision task impacts on the process of decision making, such as the likelihood of using a decision tool. Thus, knowledge about the nature of nursing decisions is essential for development of effective decision tools. This paper presents an analysis of 410 nurse-patient consultations and interviews with 76 primary care nurses, and explores the nature of the decisions that primary care nurses make and the impact of that on their use of and attitudes towards decision tools.

Introduction

The term 'decision tool' [1] refers not only to computerised decision support systems and clinical practice guidelines but includes nomograms (charts that simplify complex information such as Body Mass Index (BMI)), templates incorporated into electronic patient records (EPRs), predictive scores (such as early warning scoring systems for clinical event risk), formularies to support prescribing, and patient information leaflets. A range of decision tools are available to health professionals to support their decision making.

Within primary care, nurses are increasingly working more autonomously, with the introduction of nurse led chronic disease management [2] and first contact care [3] and independent nurse prescribing [4], yet we know little about the nature of the

decisions they make [5]. Decisions vary in terms of complexity, ambiguity and presentation and the nature of the decision task impacts the process of decision making and the likelihood of a decision tool being used [6]. Thus, knowledge about the nature of nursing decisions is essential for development of effective decision tools [5].

A number of studies have explored nurses' attitudes towards decision tools, focusing primarily on clinical practice guidelines. Practice nurses reported finding guidelines useful as a means to consistency of practice and autonomy, despite not always adhering to the guidelines [7]. Interviews with practice nurses and district nurses about guidelines for treatment of leg ulcers found that nurses perceive guidelines as useful tools that need to be adapted for individual patients, partly because of variations in patient compliance [8]. In a study of needs assessment by health visitors, there was evidence of use of formal guidelines in fewer than ten percent of consultations observed [9]. Another study found that health visitors were concerned that use of a needs assessment tool could make a mother feel uncomfortable, and that the direct nature and timing of questions suggested by the tool could seem insensitive [10]. There was variation in how needs assessment was conducted, some health visitors using the tool covertly [11].

While such studies give insight into potential barriers to use of decision tools, research on decision tools appears to have given little thought to how the nature of the decision impacts their use. This paper presents an analysis of 410 nurse-patient consultations and interviews with 76 primary care nurses, and explores the nature of the decisions that primary care nurses make and the impact of that on their use of and

attitudes towards decision tools. When talking about the 'nature' of a decision, we mean the type of decision (e.g. assessment, diagnosis), the presenting complaint or condition that it is associated with, the cues that nurses draw on when making that decision, and the nurses' characterisations of that decision (e.g. as straightforward, complex). The research focuses on practice nurses (who work in General Practitioner (GP) surgeries); district nurses, who visit patients at home or in residential care homes, providing care for patients and supporting relatives; and health visitors, who visit clients at home, often working with mothers of young children, advising on physical and emotional development and other aspects of health and childcare.

Methodology

Data collection

Data were collected across three sites between November 2001 and September 2002. The data set contains interviews with a total of 76 primary care nurses, and observations of 410 consultations carried out by 70 different primary care nurses (Table 1). Further details of the data collection have been reported elsewhere [12].

Secondary analysis

The secondary analysis presented here can be described as 'supplementary analysis', involving in-depth focus on an emergent issue that was only partially addressed in the initial analysis [13]. While the original study was concerned with nurses' use of a range of information sources [12, 14], we wish to explore the nature of the decisions that primary care nurses make and the impact of that on their use of and attitudes towards decision tools. Multi-centre Research Ethics Committee approval has been granted for secondary analysis of this data.

Framework Analysis, an analytical approach developed for conducting applied qualitative research [15], was used as the method of secondary analysis. It involves moving through the stages of familiarisation, identification of a thematic framework, indexing, charting, and mapping and interpretation.

In seeking to understand the relationship between the nature of the decisions that primary care nurses make and their use of and attitude towards decision tools, the observational data was indexed to identify:

- Decisions made by nurses in the consultations: the type of decision, categorised using Thompson et al.'s decision typology [16], and the presenting complaint or condition it was associated with (e.g. monitoring of asthma); and

- The use of decision tools within the consultations.

The interview data was indexed to identify:

- Nurses' characterisations of particular decisions, including the cues that they draw on and their perception of the complexity of these decisions; and

- Nurses' attitudes towards decision tools.

Atlas.ti software was used to index the data.

Findings

Practice nurses' decisions

Two hundred and forty four consultations with practice nurses were observed. Practice nurses made a significant number of decisions whilst undertaking chronic disease management (CDM); these decisions included the monitoring of patients with

asthma, diabetes and hypertension, assessment of the patient's condition, and generation of appropriate action resulting from that assessment. Possible actions resulting from assessment included: changes in medication, provision of advice by the practice nurse, referral to the GP, and/or booking a future appointment.

Practice nurses' accounts of decision making in relation to CDM were brief, treating such decisions as straightforward:

'With children [peak flow is] related to height and weight and age. And with adults it's to do with age and height. So depending on what age they are and how tall they are would [...] determine what their peak flow's actually supposed to be. [...] Anything above 80% is fine, anything below then you [...] start querying it.' (PN7, Case site 1)

While relevant cues depended on the chronic disease in question, practice nurses drew on a limited number of cues. These were typically quantitative in nature, e.g. blood pressure, blood glucose level, weight, peak flow measurement and age.

Although numbers were small, of the professional groups observed practice nurses most frequently made use of decision tools, largely in relation to CDM. Clinical guidelines were observed in use on three occasions, once for hypertension management (where the nurse also showed the guideline to the patient), once for asthma management and once for annual diabetic foot assessment (where the guideline was accessed after the assessment had been conducted). Two nomograms were observed in use: a peak flow chart, for recording how well air moves out of the

patient's lungs (used once) and a chart to calculate the patient's BMI (used once). On two occasions, a template incorporated into the EPR for hypertension management was observed in use.

Of the professional groups, practice nurses had the widest range of decision tools available to them. The most frequently mentioned clinical guidelines were those for supporting CDM, particularly asthma, diabetes and hypertension.

Practice nurses' attitude to decision tools

Many practice nurses felt there was a need for clinical guidelines in order to ensure consistency of practice:

'I appreciate all patients are slightly different but you need sort of a national guideline across the board' (PN2, Case site 1)

Despite limited observed use of guidelines in the consultations, many nurses stated that they always worked to the guidelines. In a number of cases, the nurses said that they felt that they knew the guidelines 'off by heart' and so were working to them without necessarily looking at them. Referring to guidelines was a behaviour largely restricted to less frequent tasks. Guidelines would sometimes be checked after the event, used by nurses to confirm that they had taken the right action. However, there was some acknowledgement that it is not always possible to work to the guideline:

'There's always somebody who comes along who doesn't quite fit in […] the protocol should cover all eventualities but it doesn't always […] There are occasions where you still need to get advice.' (PN5, Case site 2)

Many practice nurses had involvement in developing guidelines for their practice; one nurse commented that previously guidelines had been prepared by the GPs without much consultation, were put in a filing cabinet and never looked at again. Nurses talked of making national guidelines 'more user friendly' and 'bending them' to suit their needs.

District nurses' decisions

Fifty-three (57%) of the 93 district nurse consultations observed were concerned with wound care. As such, decisions focused on which dressings to apply and communication with patients and carers about wound care. Scrutinising district nurses' accounts of wound care, it is apparent that they do not perceive there to be a single 'right' dressing for a wound:

'There are […] probably four or five products that will do […] the same or similar job.' (DN2, Case site 1)

Nurses talked of trying different dressings, of giving a particular dressing 'a go'. Nurses relied on past experience, using dressings that had worked in similar situations:

'I think a lot of it comes down to experience [...] if you used a certain dressing on certain, on similar types of wounds, you might think, 'oh that worked, we'll try that.'' (DN5, Case site 2)

They talked of paying attention to what a wound looks like, in terms of the dimensions and the colour and amount of exudates, but also the fragility of the skin. Deciding whether to try a different dressing involved comparing the appearance of the wound to its appearance at the last visit, in order to determine how well the wound was healing. When deciding how to care for a venous ulcer, nurses were concerned about patient compliance, aware that some patients find compression bandaging uncomfortable. Nurses mentioned a range of other patient factors, such as allergic reactions to dressings, the patient's mobility (how much would they be moving about? how often would they be bathing?), whether they were diabetic, and what medication the patient was on.

Use of a decision tool was not recorded for any visit, although the majority of district nurses described having guidelines for wound management.

District nurses' attitude to decision tools

Like the practice nurses, the district nurses considered guidelines to be useful for ensuring consistency of practice. They were also seen as a way of encouraging reflection on practice. However, guidelines were seen of being of limited benefit:

'They only tell you what you should be doing in an overall sense.' (DN2, Case site 1)

One nurse was in the process of developing a new guideline for wound care to support nurses to 'read the wound', rather than the old guideline which just gave a list of dressings, which she described as 'very deskilling'. A couple of the nurses talked of working outside the guideline:

'If it's a particularly bad wound or particularly wet wound, for example, and you have tried the prescriptions on the formulary and you've not found them to work and you know the dressing that you feel could address the problem, whether it's out of the formulary or slightly more expensive, then as long as you can say, "I've tried the others, they didn't satisfy the wound", you can usually.' (DN7, Case site 2)

Health visitors' decisions

Seventy-three visits made by health visitors were observed. A key role for health visitors is identifying health and social care needs within a family. Therefore, many of the health visitors' decisions related to needs assessment. While some aspects of the assessment were carried out openly, needs assessment appeared to be an activity that was predominantly hidden from the family. Needs assessment can be broken down into two decisions: whether to allocate resources, and what resources to allocate [17]. 'Resources' ranged from information from the health visitor or more frequent contact with the health visitor to referrals to other professionals within health and social care. For example, through assessing a child's development, a health visitor might identify the need for nutrition advice, for speech therapy, or for more stimulation through a nursery nurse or through play group.

Looking at health visitors' accounts of needs assessment, it is clear that they considered a wide range of cues, including many visual cues: the child's appearance, the mother's appearance, features of the home, the child's behaviour and the parents' interaction with the child. Many talked of looking at the non-verbal communication of parents and children. These visual cues were used to interpret information parents provided about issues such as the level of support they had, the child's behaviour, and how they were feeling and coping. One cue might lead the health visitor to seek other cues; for example, if the child's weight had dropped, this might motivate the health visitor to look at eating habits. Health visitors talked of needing to look at the 'whole picture' and of 'constantly observing' in order to make an appropriate assessment. For example:

'We've got some parents who are regular drug users who are fantastic parents. Who stimulate appropriately. Have got appropriate toys. Give the child lots of time and always ensure the child's safety. So it's not something you can say, because they take drugs they're not good parents.' (HV9, Case site 2)

Parents had an impact on the process and outcome of needs assessment. For example, if a child had behavioural problems but the parent had knowledge of how to deal with it and was motivated to do so, this may reduce the likelihood of a referral.

Needs assessment is not something that can always happen within one visit. Health visitors talked of needing to visit a client again, maybe because the mother might talk more without her partner there, or to build up a relationship so that the mother talks more openly:

'You have a feeling that there might be other things going on, but they are not really telling you and you are having to work at kind of building up a relationship and finding those things out.' (HV1, Case site 2)

Not being able to 'put your finger on' the problem was a recurring theme in health visitors' accounts of needs assessment. One talked of 'intangible' evidence, while another talked of feeling that something was wrong but having 'no real evidence'. This ability to identify that something is wrong was associated with experience. Tied in with this was the idea of 'grey areas', where there is no one right answer:

'Some things you follow strict guidelines, but there's a lot of other things that you kind of just - and I guess that's one of the things about this job, you kind of just have to take on the whole situation really, […] there are some things that you can't just make a sudden straight down the line decision about.' (HV1, Case site 2)

Little use was made of decision tools for needs assessment. The most frequently used decision tool was a nomogram, the growth centile chart (used in 18 consultations), used as a tool for communicating with parents about the growth of their child. Other paper based tools used for aiding assessment included the Nfer-Nelson scale for assessing child development (used in 2 consultations) and the Edinburgh Postnatal Depression Scale (EPDS) (used in 1 consultation). In the interviews, health visitors described having guidelines for routine visits (what should be discussed, what would be expected in terms of child development) and child protection, as well as assessment tools for child development and postnatal depression.

Health visitors' attitude to decision tools

Like the other professional groups, health visitors talked of guidelines as being necessary and useful, referred to when dealing with less frequent situations. One health visitor talked of assessment tools as being a useful tool for communicating with parents:

'Parents quite like it because you can actually hone in and say 'look his speech, he is not so good here, he is not following a two step command, I would expect him to do that', or 'he is not speaking enough, is he understanding', so you are sort of asking, and the parents are aware of where you are coming from.' (HV3, Case site 1)

However, two health visitors expressed a reluctance to use assessment tools in front of parents when assessing child development, although they would use a mental checklist based on a combination of protocol and experience. This reluctance was motivated by a concern to not make parents unnecessarily anxious.

More generally, there was concern over the idea of a 'checklist' approach to assessment:

'I think [a checklist] would blinker me [...] because you often can actually go into a house and think 'something is not right here' just with your knowledge and your experience.' (HV3, Case site 1)

Health visitors described a need to consider contextual factors when assessing a child's development, using assessment tools in combination with professional judgement and past experience.

No health visitor mentioned having involvement with the development of guidelines. One health visitor described her frustration at this lack of involvement, the result being that the guidelines do not reflect the limitations that health visitors have to work within:

'I don't actually like […] having to perhaps at a primary visit discuss ten issues when we know that this is a new mother with a very limited attention span. All you really want to do is tell her how to access the service and just give her the basic health promotion education.' (HV7, Case site 1)

Discussion and conclusions

The findings highlight the range of decision tools available to primary care nurses and their limited use of them. Use of decision tools can be seen as being related to the nurses' working environments; practice nurses were based in surgeries and so could access computer-based guidelines and EPR templates, while health visitors' and district nurses' consultations were mainly conducted in patients' homes. However, the findings also draw attention to the way in which the nature of decisions made by nurses varies across different branches of nursing. This variation has implications for their propensity for making use of decision tools.

Nurses' decisions and Cognitive Continuum Theory

One theoretical model that unites decision making and information use is the Cognitive Continuum Theory (CCT) [6] which suggests that the major determinants of whether decision making is intuitive (i.e. less likely to make use of decision tools) or rational (i.e. more likely to make use of decision tools) depends on the nature of the decision task and its position on a continuum. The continuum has three dimensions: complexity of the task, such as the number of cues associated with the decision and the number of judgement 'steps' required to make a choice; the ambiguity of the task, such as the familiarity of the task and the potential for accuracy; and the nature of the presentation of the task, such as the time available and the ways in which information is presented. If the decision task is presented in a manner that guides the decision maker to address a series of subtasks, has a limited number of cues, presented in quantitative form, and there is an organising principle available which is perceived as accurate, this is likely to encourage an analytical approach to decision making. In contrast, if there are a large number of cues presented pictorially, accuracy in assessment is not perceived to be possible and time is limited, this is likely to encourage an intuitive approach to decision making.

Practice nurses' decisions regarding CDM can be characterised as involving a limited number of predominantly quantitative cues and a belief that accuracy in assessment is possible. Such a decision would be associated with analytic decision making and would suggest a willingness to make greater use of decision tools. Although use of decision tools was low, the tasks conducted within the context of CDM were highly routinised, suggesting that nurses had incorporated knowledge from relevant clinical practice guidelines and EPR templates into their own knowledge base, as has been found with use of other decision tools [18, 19].

District nurses' decisions regarding wound care can be characterised as involving a large number of visual cues and a belief that, for each wound, there is a range of potentially appropriate dressings. Similarly, health visitors' decisions regarding needs assessment can be characterised as involving a large number of visual cues, many of them difficult to quantify, and a belief in 'grey areas' where high accuracy is not possible. CCT would suggest that such decisions would be associated with more intuitive decision making. There has been much debate over what intuition within decision making means [20] and we would rather simply state that, in order to make sense of cues that are difficult to quantify or articulate, nurses rely on past experience, with a reduced likelihood of the use of decision tools.

The importance of the decision task

As well as helping us to understand use of decision tools, an important implication of this research is that, when designing decision tools, it is not enough to think in terms of categories of decisions, such as prescribing decisions and assessment decisions. Rather, an understanding of the nature of the particular decision task is necessary. This is not to say that if the nature of a decision task suggests that nurses are unlikely to use a decision tool in support of that decision, development of a decision tool is inappropriate. Health visitors relied on more 'intuitive' decision processes but this posed problems for them in getting what they perceived as an appropriate response from social services. By using a more analytic approach, health visitors would be able to make their decision making more transparent, strengthening their position and enhancing 'seamless' care provision [20]. A decision tool also has the potential to

affect features of the decision it supports: it can provide an organising principle, help to decompose the task, and support the decision to be made more quickly.

Implications for the design of decision tools

In determining where on the Cognitive Continuum a decision lies, designers of decision tools are able to identify potential barriers to decision tool use and should then seek ways to overcome them. If there is a reluctance to use a decision tool because high accuracy is not perceived to be possible when research suggests that high accuracy is possible (e.g. a belief that several dressings will have similar impact on a particular type of wound, when clinical trials have demonstrated a particular dressing to have greater benefit), attention needs to be given to education and training, in order to change perception of the decision. Health visitors' concerns over using decision tools in front of clients highlight another potential barrier; design of decision tools for sensitive issues such as needs assessment need to give thought to how to design a decision tool that is unobtrusive.

Designers of decision tools also need to identify which cues health professionals perceive as relevant. Any decision, whether supported by a decision tool or not, involves a process of selecting relevant cues from hundreds of possible cues, yet it seems that many cues perceived as relevant by district nurses and health visitors are not incorporated in the decision tools available to them. The findings highlight the varying nature of the cues that nurses draw on for particular decisions. While CCT distinguishes between quantitative cues and pictorial cues, it may be useful to distinguish between information obtained by means of technology, such as a peak flow meter (*technological* cues), information gathered through the nurse's direct

perception of the patient, such as inspection of a wound (*perceptual* cues) and information that arises out of interaction between patient and practitioner (*interactive* cues) pointed to in previous research [21]. These additional distinctions help us to further understand the differences in the nature of the decisions that different primary care nurses face. While decisions regarding CDM predominantly use technological cues, decisions regarding wound care predominantly use perceptual cues, and decisions regarding needs assessment use both perceptual and interactive cues. Too often, decision tools rely on 'hard' data, ignoring 'soft' data that cannot be easily measured [21, 22]. Effective decision tools should support incorporation of not only technological cues but also perceptual cues and interactive cues. For example, a decision tool to support wound care should encourage nurses to classify the appearance of a wound, using terminology that is recognisable to nurses. Both district nurses and health visitors showed concern for patient preferences; with moves towards shared decision making, more decision tools that attempt to account for patient preferences are being developed (e.g. [23]).

The difficulty of developing a decision tool to support decisions such as needs assessment is that there is a wide range of cues that a health professional can potentially draw on. Whereas practice nurses and district nurses focus on cues that relate to the individual patient, health visitors are looking at the family and also the family's home environment. While in CDM and wound care cues are interpreted in relation to a particular condition, needs assessment involves interpreting particular cues according to assumptions about 'appropriate' behaviour, an issue about which health visitors were acutely aware. A decision tool could incorporate what are considered to be the 'key' cues but the limits of the tool need to be acknowledged, so

any recommendation provided can be interpreted in light of its partial knowledge. In studies of telephone triage, nurses adapt recommendations provided by the decision tool to incorporate cues that the decision tool does not [19, 24, 25]. In this way, nurses are supported by the decision tool, rather than being constrained by it.

Limitations of research

One of the difficulties of carrying out secondary analysis of qualitative data is what has been described as 'the problem of not having been there' [13]. However, the analysis as it developed was discussed with those involved in the collection and initial analysis of the data, who provided insight into the context of the data collection.

Perhaps a more significant problem is the time lapse between the data collection and the secondary analysis. As previously noted, the data was collected between November 2001 and September 2002. Since that time, nurses have taken on extended roles, particularly within practice nursing. Such changes may have been accompanied by changes in the use of decision tools. We hope that the analysis presented here can provide a baseline for future studies and that, having focused on the relationship between the nature of decision tasks and the use of decision tools, the implications have enduring relevance.

It is also worth reflecting on the limitations of CCT as a resource for understanding nurse decision making. CCT presents a model of decision making that hides much of the lived work of decision making; our findings suggest that what counts as a cue within a particular decision is not predefined but is something to be determined and that the use of decision tools is also impacted by understandings of 'appropriate'

occasions for the use of such tools. We hope to have demonstrated how CCT can be used by designers to reflect on the decisions that they wish to support. However, this is only one aspect of the work of decision making that needs to be explored.

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Table 1: Summary of data set

	Nurses interviewed	**Nurses observed**	**Consultations observed**
Practice nurses	27	25	244
District nurses	23	22	93
Health visitors	26	23	73