Relationship between quality of care, staffing levels, skill mix and nurse autonomy: literature review

Veronica Currie BSc
Research & Development Fellow, Quality Improvement Programme, RCN Institute, Radcliffe Infirmary, Oxford, UK

Gill Harvey PhD RN DN HV
Former Head, Quality Improvement Programme, RCN Institute, Radcliffe Infirmary, Oxford, UK

Elizabeth West PhD MSc MA BSc RN RMN DN
Former Senior Research & Development Fellow, Quality Improvement Programme, RCN Institute, Radcliffe Infirmary, Oxford, UK

Hugh McKenna PhD RN RMN
Former Dean of Faculty & Life Health Sciences, University of Ulster, Belfast, Ireland

Sinead Keeney BA MRes
Research Fellow, School of Nursing, University of Ulster, Belfast, Ireland

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Correspondence:
Veronica Currie,
RCN Institute,
Radcliffe Infirmary,
Woodstock Road,
Oxford,
Oxon OX2 6HE,
UK.
E-mail: lynne.currie@rcn.org.uk

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Aims. This paper reports a literature review exploring the relationship between quality of care and selected organizational variables through a consideration of what is meant by perceptions of quality, whose perceptions are accorded prominence, and whether changes in staffing, skill mix and autonomy affect perceptions of quality.

Background. Three basic ideas underpin this literature review: the growing focus on quality improvement in health care, concerns about the quality of care, and the move towards patient involvement and consultation. Of particular interest is the way in which changes in nurse staffing, skill mix and autonomy may affect the delivery of quality patient care.

Methods. A search was conducted using the CINAHL, Medline and Embase databases. Key words used were *quality of health care*; *quality of nursing care*; *nurse*; *patient*; *skill mix*; *nurse–patient ratio*; *outcomes*; *adverse health care events* and *autonomy*. The objective was to draw together a diverse collection of literature related to the field of health care quality. Papers were included for their relevance to the field of enquiry. The original search was conducted in 2003 and updated in 2004.

Findings. Quality of care is a complex, multi-dimensional concept which presents researchers with a challenge when attempting to evaluate it. Traditional nursing assessment tools have fallen out of use, partly because they have failed to provide opportunities to engage with and access the views of patients or nurses. There is also evidence that patient satisfaction as an indicator of quality is compromised on a number of fronts. There is conflicting information on how nurses and patients think

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about quality. Research looking at the relationship between the selected organizational variables and perceptions of quality also suffers from a number of limitations. We argue that there is a requirement for more patient-centred research exploring perceptions of quality and differences in nurse staffing, skill mix and autonomy.

Keywords: autonomy, literature review, nursing, perceptions, quality of care, shared governance, skill mix, staffing

Introduction

The central question explored in this literature review is whether there is a relationship between perceptions of the quality of care and differences in nurse staffing, skill mix and autonomy. Three basic ideas underpin this question: first, the growing focus on quality improvement in health care; second, the concerns being expressed about the quality of care; and, third, the impetus towards patient and public involvement and consultation in healthcare. Since the late 1990s major policies have been implemented across the United Kingdom National Health Service (UK NHS) aimed at raising quality (Department of Health 1997, 1998, 2000). The introduction of clinical governance in 1998 signalled the Government's intention to place quality at the centre of NHS reforms (Department of Health 1998), through the integration of all activities aimed at improving standards of care.

Patient and public involvement is identified as one of the key themes of clinical governance [Royal College of Nursing (RCN) 2003]. Patients are being identified as the experts on receiving care (Donaldson 2003), are increasingly being viewed as care managers and evaluators (Morrison 1994, Department of Health 2000, Coulter 2002), and there is now a statutory requirement to involve and consult patients and their carers (Department of Health 2001). The NHS Executive has maintained that consumers of health care should be fully involved and provided with opportunities to participate in health care research. Consumers are defined as 'patients and potential patients, carers, organizations representing consumers' interests and members of the public' (NHS Executive 1998, p. 3).

In addition, there is also a wide range of literature drawing attention to the outcomes of care. Of particular interest is the way in which changes in nurse staffing, skill mix and autonomy are said to affect the quality of care. Commentators have argued that the quality of patient care is directly linked to nurse staffing (Blegen *et al.* 1998, Aiken *et al.* 2001, 2002); nurse skill mix (Carr-Hill *et al.* 1992, McKenna 1995, Carr-Hill & Jenkins-Clarke 2003); and nurses' level of autonomy and decision-making (Porter O'Grady 1992, O'May & Buchan 1999).

Research from the United States of America (USA) has suggested that leaner nurse staffing is linked to increased length of hospital stay, hospital-acquired infections, and the prevalence of pressure ulcers (Institute of Medicine 2004). Researchers have also concluded that greater numbers of patient deaths are associated with fewer nurses being available to provide care (Institute of Medicine 2004).

This literature review was undertaken as preparation for a research project that seeks to develop data collection tools for use at ward level to explore whether nurse and patient perceptions of quality are affected by differences in selected organizational variables. The key issues considered in the review are what is meant by quality, who defines quality, what is known about the variables we have chosen to focus on, and whether or not any variables are missing from our selection.

Background

Quality in health care is defined in many ways by many different people. It is complex, multi-faceted and multi-dimensional, and attempts to assess, monitor, evaluate and improve quality have evolved over a number of years. In health care the pursuit of quality has been driven by concerns over its costs, as well as a move towards continuous quality improvement (CQI). The emphasis on CQI has involved a paradigm shift in thinking about quality, to one which emphasizes the central role of patients, the processes of care, and the role of leadership and organization in the creation of a learning culture of quality (Harvey 1993).

Quality has been defined along a number of different dimensions, for example, access, equity, effectiveness, acceptability, appropriateness and efficiency (Maxwell 1984). It has also been defined in terms of absolutist, individualized, or social aspects of care (Donabedian 1979, 1982). However, Donabedian (1990) has argued that definitions of quality used in much of the empirical health care literature remain narrowly focused on the technical or 'absolutist' aspects of care. Jackson-Frankl (1990) suggests that it is illogical to assume that everyone defines quality in the same way, while Larsson and Larsson (1999) and O'Connell *et al.* (1999)

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assert that patients' perceptions should be viewed as a legitimate aspect of quality.

In recent years, there has been global interest in the recruitment and retention of qualified nurses and the impact that nurse shortages may have on the quality of care delivered to patients (Kovner & Gergen 1998, Aiken *et al.* 2001, Newman *et al.* 2001, Duffield & O'Brien-Pallas 2002, Kovner 2002, Newman & Maylor 2002). In particular, over the last two decades nursing has seen its numbers decrease through a combination of fewer people entering the profession, a crisis in retention as a result of many qualified nurses leaving because of stress, burnout and job dissatisfaction (Aiken *et al.* 2002, Berliner & Ginzberg 2002, Newman & Maylor 2002, Tierney 2003), and an ageing nursing workforce (Buchan 2002, Goodin 2003). Furthermore, the introduction of health care assistants in the UK and unlicensed practitioners in the USA has led to alterations in skill mix, with some commentators suggesting that such changes may also negatively affect quality (Gibbs *et al.* 1991, Morris 1992, Davison 1994, Cahill 1995, Blegen *et al.* 1998, Jenkins-Clarke & Carr-Hill 2001, Waters 2003). With regard to nurse autonomy, the seminal work on magnet hospitals in the USA by Aiken and colleagues highlights how retention is linked to how nurses view opportunities to work flexibility and be involved in decision-making (Aiken *et al.* 1994, Lewis & Matthews 1998, Gleason Scott *et al.* 1999, Aiken *et al.* 2000, Aiken & Patrician 2000). Such opportunities are sometimes referred to as 'shared governance'.

Aims

Given the complexity and multi-dimensionality described above, research exploring quality is methodologically difficult. There is a requirement to define quality clearly, to use appropriate research designs and to build on what is already known. In designing and planning our study, we undertook a literature review to inform the key issue we are attempting to address – whether differences in perceptions of quality are affected by changes in nurse staffing, skill mix, and autonomy. This involved consideration of the following questions:

- How is quality evaluated?
- What do we mean by perceptions of quality?
- Do professional and patient perceptions of quality differ?
- What is the relationship between nurse staffing levels and quality?
- What is the relationship between nurse skill mix and quality?
- What is the relationship between nurse autonomy and quality?

Search methods

A comprehensive search was conducted in 2003, and updated in 2004 using the CINAHL, Medline and Embase databases. The key words used were *quality of health care*; *quality of nursing care*; *nurse*; *patient*; *skill mix*; *nurse–patient ratio*; *outcomes*; *adverse health care events* and *autonomy*. A broad approach to searching was undertaken to ensure that any potentially relevant papers were not missed. The search included articles written in English, and no limitations were placed on the date of publication. Where possible all key search terms were exploded and all subheadings were included. In addition, the reference lists of retrieved articles were also scrutinized. The objective was to draw together a diverse collection of literature related to the field of health care quality. Papers were included for their relevance to the field of enquiry, and editorials were included but letters and news items excluded.

Findings

Evaluations of quality

In the UK, studies investigating the quality of nursing care have often relied on established nursing quality assessment tools (Pearson *et al.* 1989, Carr-Hill *et al.* 1992). They have employed tools such as The Quality of Patient Care Scale (QualPaCs) and Monitor, which were used widely in the NHS during the 1980s. QualPaCs was originally developed in the USA in the early 1970s and was designed to measure the quality of care received by patients (Wandelt & Ager 1974). Trained nurse assessors administered it by observing periods of care and scoring these using a five-point scale. Monitor (Goldstone *et al.* 1982), which was adapted from the Rush Medicus Index (Jelinek *et al.* 1974), was a checklist developed for use in the UK. It was aimed at the process of nursing care delivered in acute medical and surgical wards, and was administered by trained nurse assessors.

In recent years, the use of QualPaCs and Monitor appears to have waned for a number of reasons. Research has questioned their reliability and validity, their reliance on professional judgement, and the fact that they are often unwieldy and difficult to administer (Tomalin *et al.* 1992, Norman & Redfern 1995, Redfern & Norman 1996). Their lack of uptake in recent years may also be linked to a more progressive culture in nursing which places considerable emphasis on staff and patient involvement, partnership working, and a desire for quality assessment tools that are less 'top-down' and prescriptive.

Patient satisfaction surveys have been used increasingly in both the UK and USA as an indicator of quality (Tomalin *et al.* 1992, Harvey 1993, Avis *et al.* 1995, Norman & Redfern 1995, Redfern & Norman 1996). The dictionary definition of satisfy is 'to meet the expectations or desires of', 'comply with' or 'be accepted by' (Oxford University Press 2002). This implies that asking patients how satisfied they are with the care they have received is asking them to make an evaluation assessment of that care. The overwhelming finding from most of these surveys is that patients nearly always express high levels of satisfaction (Williams 1994, Sitzia & Wood 1997, Williams *et al.* 1998).

While the employment of patient satisfaction surveys remains central to current NHS quality initiatives, their use is subject to growing critique. Specific criticisms are that they give little understanding of how patients evaluate their care (Avis *et al.* 1995); lack any clear conceptual or theoretical basis (Bond & Thomas 1992); fail to elicit patients' feelings, values and experiences (Hiidenhovi *et al.* 2002). In addition the findings are difficult to interpret (Rogers *et al.* 2000); their validity is doubtful (O'Connell *et al.* 1999, Staniszewska & Ahmed 1999); they have methodological weaknesses (Aspinall *et al.* 2003), and they distort the actual level of satisfaction (Edwards 2000).

As a result of the growing disenchantment with patient satisfaction surveys as a means of evaluating quality, some researchers are exploring more innovative ways of capturing how patients feel about the quality of their care. For example, Staniszewska and Henderson (2004) consider that one way forward is to develop more sensitive questionnaires that will result in greater insights into patients' experiences, as well as facilitate greater patient participation in judgements about the acceptability, appropriateness and effectiveness of care.

Perceptions of quality

In terms of perceptions of quality, researchers have endeavoured to elicit both patient and staff perceptions of quality through the use of qualitative approaches (Ludwig-Beymer *et al.* 1993, Fosbinder 1994, Hogston 1995, Clemes *et al.* 2001). The dictionary definition of perception is 'the intuitive recognition of a truth, aesthetic quality' or 'an interpretation or impression based on one's understanding of something' (Oxford University Press 2002). This implies that, in asking someone about their perception of quality, we are asking them to articulate what they understand quality to be.

While consumers are said to be able to define quality, their perceptions differ from those of providers and administrators (Ludwig-Beymer *et al.* 1993). While exploring nurse–patient interactions in order to identify nurses' interpersonal competence from a patient perspective, Fosbinder (1994) found that, although patient perceptions of quality were not clearly articulated, they did appear to be related to interpersonal relationships.

Differences in perceptions of quality

In eliciting nurses' perceptions of quality, Hogston (1995) identified structure, process and outcome as a useful framework for defining quality. He reported that many nurses perceived quality in terms of process and outcome, primarily because they controlled these, while managers controlled structure. A study in New Zealand by Clemes *et al.* (2001) explored patient perceptions of service quality, and found that they perceived quality in relation to the core products in health care (outcome and reliability), which they viewed as being more important than the peripheral products (food and access).

While there are studies reporting congruence in the way that staff and patients perceive quality (Redfern & Norman 1996, Al-Kandari & Ogundeyin 1998), others have taken a contrary viewpoint (Ervin *et al.* 1992, Irurita 1999, Attree 2001, Bassett 2002). Research exploring nurses' perceptions of care and caring suggests that there are differences between what patients and nurses perceive to be good care. Nurses have appeared to value the interpersonal elements, while patients seemed to value competence, knowledge and technical skills (Bassett 2002). Research by Ervin *et al.* (1992) found that patients and staff commonly disagreed on the nature of health problems, treatments and outcomes. Irurita (1999) and Attree (2001) reported that patients identified different levels of quality that depended on contextual and intervening conditions linked to environment, organization, and the personal characteristics of both staff and patients.

Staffing, skill mix and autonomy

In 1983, the American Academy of Nursing (AAN) undertook a study to explore what nurses found satisfying about the hospitals in which they worked. This study highlighted 41 sample hospitals that were 'distinguished by high nurse satisfaction, low job turnover, and low nurse vacancy rates', and these hospitals were accredited as magnet hospitals (Havens & Aiken 1999, p. 101). The label 'magnet' was given to hospitals that successfully recruited and retained nurses during a national nurse shortage. Some of the core characteristics of these hospitals are having an executive nurse on the board, a participatory and supportive management style, adequate nurse staffing, flexible working schedules, professional autonomy and responsibility, availability of

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specialist advice, emphasis on continuing education, competency based clinical ladders, and management development (Buchan 1999, p. 101).

Aiken *et al.* (1994) matched 39 magnet hospitals with 195 controls. She compared mortality rates, while controlling for hospital characteristics. Magnet hospitals had a mortality rate 7·7% lower than control hospitals. After adjusting for differences in predicted mortality, magnet hospitals had a 4·6% lower mortality rate. This prompted Aiken to suggest that the same factors that bestow magnet status on hospitals known for good nursing care are also associated with lower mortality rates. Other research on magnet hospitals has highlighted relationships between nursing, patient outcomes and patient satisfaction (Gleason Scott *et al.* 1999).

Aiken (2000) explored the designation of magnet hospital status by the American Nurses Credentialing Center (ANCC) and compared these with the original magnet hospitals to ascertain whether they were as successful. She found that ANCC hospitals performed as well as, if not better than, the original magnet hospitals in terms of higher educational preparation of nurses, nurse-to-patient ratios and better quality of care. While the numbers of ANCC hospitals are small, there is the possibility that this approach could become the industry norm (Buchan 1999). However, Buchan has questioned the transferability of the ANCC programme to the NHS.

Limitations have been identified in the magnet research, including biased sampling techniques both in identifying the hospitals and the staff (self-selection) and in the use of group interviews, which may have inhibited openness (Buchan 1999, Gleason Scott *et al.* 1999). Failure to collect information on hospitals that experienced difficulties in nurse recruitment and retention may have made it difficult to prove that the core characteristics of magnet hospitals were not also present in non-magnet hospitals, or that additional core characteristics were missed (Buchan 1999). Failure to collect information on staff groups other than nurses may also have led to difficulties in determining whether attributes were shared across groups (Buchan 1999). In addition, Aiken's (2000) use of the original magnet hospitals as the unit of comparison may have led to underestimating the difference between ANCC magnet hospitals and non-magnet hospitals (Gleason Scott *et al.* 1999, p. 17).

While the concept underpinning the creation of magnet hospitals is still relevant, Buchan (1999) has argued that in order to validate the processes by which hospitals are given magnet status, more research is needed to investigate the relationship between nursing care and patient outcomes. We suggest that, while magnet hospitals may be better places for nurses to work, not enough information is yet known about whether they are better places for patients to be treated. While research increasingly identifies magnet hospitals as providing excellent nurse-rated quality care, the patient perspective is missing.

Staffing levels

During the last decade a great deal of amount of research has been undertaken exploring the relationship between nurse staffing and quality (Kovner & Gergen 1998, Aiken *et al.* 2002, Blakeman-Hodge *et al.* 2002, Needleman *et al.* 2002). Kovner and Gergen (1998) examined the relationship between nurse staffing and adverse events that were hypothesized as being sensitive to nursing care. Using discharge data from 589 acute care hospitals across 10 states in the USA to create hospital-level adverse event indicators, and matching these with data from the American Hospitals Association, the authors highlighted 'a large and significant inverse relationship…between full time-equivalent RNs per adjusted inpatient day…and urinary tract infections after major surgery…as well as pneumonia…' (Kovner & Gergen 1998, p. 315).

In a cross-sectional analysis Aiken *et al.* (2002) explored the association between patient–nurse ratios and patient mortality, and failure-to-rescue (deaths following complications) and factors related to nurse retention. They surveyed 10,184 Registered Nurses, and analysed discharge data from 232,342 patients and administrative data from 168 general hospitals. The main outcome measures were risk-adjusted patient mortality and failure-to-rescue within 30 days of admission, nurse-reported job dissatisfaction and burnout. The authors concluded that, in hospitals with lower levels of nursing staff, surgical patients experienced higher risk-adjusted 30-day mortality and failure-to-rescue rates, and nurses were more likely to report burnout and job dissatisfaction.

A recent study in the USA tested the association between nurse staffing levels and a number of adverse outcomes related to medical and surgical patients (Needleman *et al.* 2002). An analysis of administrative data from 799 hospitals across 11 US states, including discharge data on 5,075,969 medical patients and 1,104,659 surgical patients, found 'consistent evidence of an association between higher levels of staffing by registered nurses and lower rates of adverse outcomes…' in eight of 25 outcomes (Needleman *et al.* 2002, p. 1720). These included urinary tract infection, upper gastrointestinal bleeding, hospital-acquired pneumonia, and failure to rescue.

There are, however, several points worthy of consideration when looking at the findings reported by Kovner and Gergen (1998), Aiken *et al.* (2002) and Needleman *et al.* (2002). In these studies, the indicator of quality was measured in terms

of a reduction in adverse outcomes; however, Feinstein (2002) has argued that an over-reliance on outcomes of care can lead to a disassociation from care processes, with the very real possibility that patients may have good outcomes despite experiencing poor care, while others may have poor outcomes despite experiencing excellent care. It is also important to note that outcomes are unlikely to be attributable wholly to the interventions of a single professional group. In addition, the use of retrospective documentation and discharge data as a basis for assessing quality can also be criticized because it offers little insight into how nurses and patients feel about quality.

In reporting the limitations of their study, Needleman *et al.* (2002) highlighted the possibility of false positive findings as a result of the large number of comparisons and the inherent weaknesses of working with pre-existing data, and suggested that level of nurse staffing is an incomplete measure of quality. Furthermore, Feinstein (2002) reinforced the point about the limitations of pre-existing data because information about symptom relief, functional status, and staff–patient interactions will be missing.

Skill mix

Skill mix has been defined as the proportion of staff qualifications, levels of competence, abilities, knowledge and experience that are necessary to achieve an agreed standard of care for a given level of demand (Cahill 1995). In 1992, the UK RCN defined skill mix as 'the balance between trained and untrained, qualified and unqualified and supervisory and operative staff within a service area…the optimum skill mix is consistent with the efficient deployment of trained, qualified and supervisory personnel and the maximisation of contributions of all staff' (RCN 1992, p. 1).

Skill mix reviews have been identified as a way of giving organizations information on the best way to provide good quality nursing services through a combination of nursing skills (Gibbs *et al.* 1991). Attempts to review and change skill mix, particularly in response to nurse shortages and as a way of reducing costs, have met with mixed responses. For example, such changes have been identified as 'highly contentious' (Gibbs *et al.* 1991, p. 242); 'skill dilution' (Davison 1994, p. 38); 'an explicit attack on the values of nursing' (McKeown 1994, p. 37); and 'skill substitution' (McKenna 1998, p. 3). On a more positive note, however, skill mix has been identified as enhancing nursing's professionalism and releasing qualified nurses to perform activities requiring higher levels of skills and knowledge (Friesen 1996).

McKenna (1995) suggested that three assumptions are commonly tested in research exploring skill mix and quality: 'those which suggest that a rich skill of mostly qualified nurses is costly and can be detrimental to patient care; those which suggest that a poor skill mix of mostly unqualified staff is costly and detrimental to patient care; and those which suggest that a rich skill mix of mostly qualified staff is cost-effective and improves the quality of patient care' (McKenna 1995, p. 457). McKenna concluded that, although there are sufficient studies to support the retention of high numbers of qualified nurses, only a minority of these demonstrate sufficient rigour.

Research by Blegen *et al.* (1998) found that changes in skill mix do affect patient outcomes. Exploring the relationship between the total hours of nursing care, Registered Nurse skill mix and a range of adverse outcomes, they found that the higher the proportion of Registered Nurses, the lower the incidence of adverse events on inpatient units.

A recent analysis of the activity and workload of nurses on different grades (Carr-Hill and Jenkins-Clarke (2003) found that, in terms of the division of labour, while there was a clear demarcation between different grades of staff, there appeared to be little difference in the types of tasks undertaken, leading the authors to suggest that staff skills are not being used effectively. Staff grades were identified as: senior nurses (G, H and I), qualified nurses (D, E and F), and nursing support staff (A, B, C, nursing assistants, student nurses and nursing auxiliaries); non-nursing staff were housekeepers (or equivalent) and ward clerks; and bank staff referred to all grades of agency/bank staff (Carr-Hill & Jenkins-Clarke 2003, p. 3). With regard to skill mix, the report stated that 'there appears too little increased specialisation between staff groups as overall staffing increases. An additional person of any grade does more of everything' (p. 8). Concerning flexibility, the report's authors argued that although staff are deployed differently within different specialties, there is little flexibility in this deployment in response to variations in patient demand.

In critiquing the relationship between skill mix and quality, one commentator suggested that there is little evidence that its introduction compromises quality (Friesen 1996). Friesen argued that most of the literature suggesting a diminution of quality was based on opinion or conjecture rather than research. McKenna (1995) recommended more 'high quality replicative research in this area' (McKenna 1995, p. 457), a sentiment echoed by Friesen (1996) and Rowell and Milholland (1998).

Autonomy (shared governance)

Shared governance grew in popularity in the USA during the late 1980s (Havens 1992, Porter O'Grady 1992, 1994, Gardner & Cummings 1994, Kennerly 2000, Miller 2002). It

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What is already known about this topic

- The concept of quality of care is complex, multidimensional and widely contested.
- There is a growing body of literature to suggest that global nurse shortages may have a direct impact on the quality of patient care.
- Much seminal research has been undertaken exploring the relationship between quality and a range of organizational variables, including nurse staffing, skill mix and autonomy.

What this paper adds

- Several limitations are present in research that has been undertaken on the relationship between quality of care, nurse staffing, skill mix and autonomy.
- Patients' voices are invisible in much of the research exploring the impact that changes in nurse staffing, skill mix and autonomy have on the quality of patient care.
- Systematic, rigorous research exploring patients' perceptions of the quality of care is long overdue.

has been identified as having its origins in business and management, where research undertaken by the Tavistock Institute 'emphasised the structure of work from the point of service…outward, rather than from the organisation downwards, in the traditional hierarchical manner' (O'May & Buchan 1999, p. 282). Since the late 1990s shared governance has also found favour in the UK NHS (Edmonstone 1998, Doherty & Hope 2000, Elton *et al.* 2001, Rapson *et al.* 2001, Lymbery 2002, Burnhope & Edmonstone 2003).

Shared governance has been defined as an 'organisational process that legitimises nurses' control of their practice and extends their influence into some areas that may have been previously controlled by management' (Hess 1994, p. 28). However, shared governance suffers from a diversity of definitions that has led to some confusion (Hess 1994, Gavin & Wakefield 1999, O'May & Buchan 1999). Gavin and Wakefield (1999) have argued that the proliferation of euphemisms employed to describe shared governance merely serve to disguise the fact it is a radical innovation because it challenges assumptions, bureaucracy and power relationships, and reinforces inherent complexities and ambiguities.

While no clearly articulated theoretical framework exists for shared governance, it is possible to identify a number of core assumptions, values and principles (Gavin & Wakefield 1999), including nursing responsibility, authority, and accountability. However, it is clear that shared governance is about much more than professional autonomy and involvement in decision-making. Its benefits are identified as improved staff retention, increased staff morale, reduced costs, increased participation in decision-making, improved clinical skills, improved quality, and facilitation of effective multi-disciplinary working (Porter O'Grady 1992, Gavin & Wakefield 1999, Doherty & Hope 2000).

Despite the volume of literature extolling the benefits of shared governance, there is very little in the way of critique or empirical research on its impact on important outcomes for staff or patients. Much of the literature on the subject is anecdotal, with limited research on its benefits, and little agreement about its 'precise nature' (Gavin & Wakefield 1999, p. 194). What research is available is undermined by methodological weaknesses, including sample bias, incomplete explanation of findings, limited opportunity for cross-comparison, and publication bias (Gavin & Wakefield 1999, O'May & Buchan 1999).

Conclusion

In exploring the relationship between perceptions of quality and differences in nurse staffing, skill mix and autonomy, where perceptions have been sought this has invariably been from health care professionals. Further research is needed to explore ways in which we might begin to be more creative in ensuring that patients' perspectives on quality are given equal weight to the professional voice in any assessment of quality. This view is reinforced by others (Hart 1996, Oermann 1999, Clemes *et al.* 2001, Drain 2001). If we are to meet the requirements of the UK NHS modernization agenda, then research aimed at evaluating quality must do more to ensure that patients' voices are heard. Patients' views are crucial in seeking to make an assessment of quality, since 'satisfying patients' expectations is an important component of high quality care …because patients can provide information that is not available from other sources' (Cleary *et al.* 1991, p. 263).

Ensuring that patient voices are accorded equal prominence with professional voices will only strengthen attempts to explore whether there is a correlation between changes in perceptions of quality and differences in nurse staffing, skill mix and autonomy. Paraphrasing Coulter and Cleary (2001), the professional voice alone is not enough to show whether services are responsive to patients' needs and preferences. This literature review has shown that a great deal of interesting and important research has been undertaken on the quality of care, but there is also a real gap in our knowledge and understanding about how patients define and experience quality care. We plan to use these findings to

design a study to explore whether differences in perceptions of quality are linked to changes in nurse staffing, skill mix and autonomy.

Author contributions

LC, GH, EW, HM and SK conceived and designed the study and critically revised the paper. LC collected and analysed the data and drafted the manuscript. GH and EW provided supervision.

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