NHS managers' use of nursing workforce planning and deployment technologies: a realist synthesis

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Scientific summary

Nursing workforce planning and deployment technologies

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Scientific summary

Background

The planning and deployment of nurses appears to have an impact on patient outcomes, with safe staffing being intrinsic to good-quality care. Yet, in the context of increasing health-care demands and nurse staffing deficits, staffing planning and deployment is a challenge for NHS managers. The current UK guidance recommends that NHS managers use a triangulated approach to make safe staffing decisions, so that there are appropriately trained nurses, in sufficient numbers, to meet patients' individual requirements. This approach entails the use of evidence-based workforce planning and deployment tools and technologies (WPTs), professional judgement and comparison with peers. However, little is known about how managers interpret, implement or use WPTs across organisations. It is therefore timely to review their use. This study was specifically interested in understanding how and why WPTs may have an impact on NHS managers' decision-making on safe staffing and in exploring the influence of context.

Aims and objectives

The review question and study objectives were taken from the protocol (available at www.journalslibrary.nihr.ac.uk/programmes/hsdr/1419420/#/).

The review question asked 'NHS managers' use of workforce planning and deployment technologies and their impacts on nurse staffing and patient care: what works, for whom, how and in what circumstances?'.

The aim was to engage stakeholders to produce an evidence-based, realist programme theory that explains the successful implementation and impact of nursing WPTs by NHS managers.

The review objectives were to:

- identify the different WPTs that could be used to deploy the nursing workforce resource in the NHS, paying attention to the ways in which they are assumed, and are observed, to work
- explore the range of observed impacts of these technologies in different health-care settings and for other public services, paying attention to contingent factors
- investigate ways that can help NHS managers to identify, deploy and evaluate the nursing workforce resource to have the greatest impact on direct patient care
- generate actionable recommendations for management practice and organisational strategy
- contribute to the wider public debate about, and understanding of, the nature of the nursing workforce, nursing work and the quality of patient care.

Methods

This realist synthesis followed recognised realist principles and realist synthesis publication standards. The study was conducted in four phases, with embedded stakeholder involvement throughout. The stakeholder engagement contributed to the understanding of contextual influences and the system of nurse workforce planning and deployment. Stakeholders were also involved in the development of the programme theory, the interpretation of the evidence and knowledge mobilisation.

Phase 1

Scoping the literature

The underpinning literature on the management of the nursing workforce was reviewed in order to construct a theoretical framework (or programme theory) of NHS managers' use of WPTs for safe staffing decisions. Evidence was combined from different domains of the literature, such as deployment, skill mix and nursing workload tools, knowledge and skills. Different relevant theoretical perspectives were also considered, for example on human resource management and technology adoption.

Developing explanations for the complexity of workforce planning and deployment

Stakeholders, including NHS managers, health-care professionals and patient and public involvement (PPI) representatives, were consulted during this process to gain an understanding of the system of nurse workforce planning and deployment. Two workshops with NHS managers and two PPI workshops were held. In addition, 10 audio-recorded semistructured interviews were conducted with NHS managers. The project team also consulted an advisory group, which consisted of experts in the field of NHS staffing. Stakeholder engagement contributed to the development of the scope and theoretical territory through the illumination of contextual issues and influences in workforce planning and deployment. The interviews facilitated further explanations of the system of workforce planning and deployment, and examined managers' use of WPTs across organisational settings. This culminated in a rich description of the system of nurse workforce planning and deployment and resulted in two outputs: (1) a model of the system of nurse workforce planning and deployment and (2) a typology of WPTs. These outputs were reviewed and refined by the advisory group.

Programme theory identification

The scope of the literature and stakeholder engagement also resulted in the formulation of eight theory areas, which encompassed several concepts and issues related to nurse workforce planning and deployment. These theories offered explanations of the complexity of using WPTs. The theory areas included:

- the world view of staffing deployment
- organisational influences
- influences of clinical need
- technologies and tools for predicting real-time and future need
- resource availability
- day-to-day management of resources
- nurse managers' values and use of professional judgement
- the impacts of managers' day-to-day work in balancing resources and demand.

Phase 2

The searching process

Guided by the issues and concepts that surfaced within the eight theory areas, the search strategy on nursing WPTs was comprehensive. It combined primary and purposive searches to target evidence specific to nursing contexts and then was expanded to search for evidence on workforce research in related fields. A list of search terms was created from the work on theory development.

Selection and appraisal of documents

The review process adhered to realist synthesis principles with the inclusion of trustworthy evidence of relevance to the developing programme theory. In addition, the source material was reviewed for 'nuggets' of evidence that also offered explanatory potential. To ensure that evidence was sufficiently specific to contribute to the synthesis, a bespoke data extraction form was developed, which contained a set of constructs from the theory areas. This provided a visible template to examine and explore the theories. A total of 87 sources of evidence contributed to the synthesis.

Data extraction, analysis and synthesis

An iterative approach was used to refine and test the extracted information to develop the theory areas. The evidence was organised into themes within the theory areas, and retroductive and abductive analysis was applied to determine emerging patterns around plausible context–mechanism–outcome (CMO) configurations. Emerging evidence was related to the findings from the stakeholder engagement.

Phase 3

The CMOs were then developed into statements and elaborated using evidence from the literature. Stakeholder engagement explored the validity of the CMOs, and throughout, attention was paid to evidence that confirmed these or not. To further validate the CMO configurations, an additional 11 audio-recorded interviews with NHS managers were conducted using a think-aloud technique and further stakeholders were consulted via a @WeNurses Twitter (Twitter, Inc., San Francisco, CA, USA; www.twitter.com) chat.

Phase 4

The findings from the evidence synthesis were related to a compendium of mid-range theories to expand the team's understanding of the contingent processes underpinning the CMOs. A set of actionable recommendations were developed for clinical practice, including a quality assurance framework, and recommendations for areas for future research were proposed.

Results

The synthesis resulted in seven CMO configurations. These explanatory accounts constitute a programme theory about what works to support NHS managers in the implementation of WPTs and their impacts on nurse staffing.

System integration and workforce planning and deployment tools and technologies

When there is positive reinforcement between proximal (e.g. staff flexibility) and distal (e.g. social factors/ organisational reputation) aspects of the staffing system (*context*), WPTs enable better forecasting of real-time and future demands (*mechanism*), resulting in better staff outcomes (*outcome*).

Alignment of organisational strategies over workforce planning and deployment tools and technologies

When and where there is alignment between relevant organisational strategies (*context*), it enables NHS managers to use the tools and technology as levers for change or negotiation (*mechanism*), promoting the patient safety agenda within the organisation (*outcome*).

Supporting the NHS manager to use workforce planning and deployment tools and technologies

When there is visible support for managers, skill development and leadership (*context*), the tools and technology empower NHS managers to make sense of complex data (*mechanism*), increasing the likelihood of staffing skills being in the right place (*outcome*).

Integration of workforce planning and deployment tools and technologies with organisational knowledge and NHS managers' capabilities

When managers possess key attributes of leadership and 'know their staff' (*context*), and when the tools and technology help to make resources visible (*mechanism*), NHS managers have greater influence in their safe staffing work (*outcome*).

Organisational learning and workforce planning and deployment tools and technologies

When the culture within the organisation is supportive and includes a culture of evaluation (*context*), NHS managers are able to work together using standardised data from tools and technology (*mechanism*), to learn together about safe staffing (*outcome*).

Co-design of workforce planning and deployment tools and technologies

When there is partnership in design with the users of staffing tools and technology (*context*), and when NHS managers see tools as fit for purpose (*mechanism*), tools and technology are placed close to the decision-making point (*outcome*).

Workforce planning and deployment tools and technologies and involving patients

When there is the organisational propensity and policy around disclosure of staffing levels (*context*), communication is balanced between candour and refining the message (*mechanism*) to ensure the confidence of patients and families (*outcome*).

Limitations

The decision-making process within realist research is nuanced and this study may have omitted to pursue important threads of evidence or 'nuggets' of important detail in the published literature. However, the study's team are experienced in realist methodology and collectively made decisions on the direction of synthesis, to ensure that literature with relevance to the programme theory was identified. All decision-making processes were scrutinised and documented. In some areas, a lack of relevant detail was identified, particularly on how managers' roles were defined, how managers applied their professional judgement and how skills were developed for communicating decisions on staffing to patients and the public. There was also little relevant evidence on staffing from other public services.

Implications for health care

The evidence synthesis suggests that the effective use of WPTs by NHS managers is contingent on organisational factors. It would appear that effective implementation of WPTs requires organisational strategies that support the development and use of WPTs, as well as a supportive financial strategy is pivotal for the investment required. Commitment from leadership at all levels within organisations appears to promote strategic alignment and synergy with system integration, so that organisational processes are flexible and able to respond to the decisions NHS managers make using data from WPTs. Co-design appears to be essential to the processes of the development of WPTs that are fit for purpose and integrate standardised data for effective decision-making, benchmarking and evaluation. The evidence strongly suggests that organisations should place close attention on supporting NHS managers to develop the leadership and communication skills necessary to negotiate the challenges resulting from staffing decisions made using WPTs. In addition to investing resources in expert support, training and education on WPTs, the evidence synthesis suggests that NHS managers need supportive leadership, mentorship and feedback to develop their professional judgement on staffing decisions using WPTs. Based on the evidence synthesis, a quality assurance framework was designed to support managers in the use of WPTs within different services when staffing has an impact on quality.

Recommendations for research

The findings from the evidence synthesis suggest a number of implications for future research. Further evaluation of the programme theory is recommended through empirical research, further analysis of the use of professional judgement and how this can be improved and longitudinal studies to determine the best format for educational programmes to support NHS managers to develop the skills, knowledge and confidence required for the effective use of WPTs in safe staffing decisions.

Conclusions

The seven CMOs cumulatively provided a programme theory, supported by the evidence from the literature and stakeholder engagement, about how NHS managers can successfully implement WPTs and the impact of NHS managers' work using WPTs. This contingent explanatory framework combines the CMO configurations to explore the relationships between them to provide a theoretical and potentially practical guidance. The programme theory suggests how organisational context may trigger or suppress mechanisms to result in specific outcomes, or not, in relation to NHS managers' use of WPTs. Furthermore, this theory, although specific to NHS managers' use of WPTs, has produced CMO configurations that may be transferable to other workforce deployment and planning approaches. The explanatory quality framework may be used to guide managers' development in the use of WPTs in complex settings, as the findings propose supportive evidence of what works for whom, why and in what contexts.

Study registration

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