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The impact of foundation doctor training: impact on workforce wellbeing and patient care

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The impact of foundation doctor training: impact on workforce wellbeing and patient care: Phase 2 (The EDiT Study)

Scientific Summary

Aims

- to identify how the experiences of foundation year 2 (FY2) doctors training in EDs impacts on their well-being, motivation and job satisfaction.
- to evaluate how the well-being and motivation of FY2 doctors in emergency departments (EDs) impacts on the quality of patient care
- to identify key measures of FY2 doctor well-being and motivation, which impact on quality of patient care and which will underpin the development of a tool to monitor well-being and motivation during training.

Study type and setting

Multi-site longitudinal observational study in at least 15 EDs. The study will evaluate the well-being of FY2 doctors, the quality of the care they deliver and investigate the relationship between these dimensions.

Methodology

- Survey utilising validated measures carried out with three successive cohorts of FY2 doctors, measuring their well-being, motivation and job satisfaction. Professional identity, confidence and competence will also be measured. An overall well-being score for each doctor will be calculated from these measures. The survey will be carried out in at least 15 EDs, at up to four time intervals over the 12 months of the study. Surveying at four time intervals will allow measurement of FY2 doctors' well-being over the whole foundation year and before and after their ED placement.

- Quality of care provided by FY2 doctors will be measured by selecting a sample of clinical records for the three cohorts of doctors across the participating EDs. A holistic records review approach will be taken by trained middle grade doctor reviewers to provide a quality of care score for each FY2 doctor.

- Routine data will be collected from each ED to measure the performance of FY2 doctors and the ED over the study period.

- FY2 doctors' scores on well-being and quality of care will be evaluated to explore the relationship between well-being and quality of care in this cohort.

Outcomes

1. Workforce Outcomes:
   - FY2 doctor, well-being, motivation and job satisfaction
   - Differences in FY2 doctor well-being, motivation and job satisfaction compared across EDs

2. Patient Outcomes:
   - Score on safety and quality of clinical care provided by FY2 doctors following the records review
   - FY2 doctor performance, perceived confidence and competence over time

4. Service outcomes:
   - ED performance measured by mean waiting times, 4-hour performance, workload and work rate of FY2 doctors

5. Research outcomes;
   - Identification of measures of well-being and motivation that may be further developed into a validated generic tool for use in foundation training.

Lay Summary

There have been a number of changes made recently by the government to improve the working conditions and well-being of NHS staff as there is evidence that improved working conditions can improve staff well-being, and in turn patient care. However the evidence of a direct link between well-being of staff and quality of patient care within healthcare is limited. More evidence is required about which aspects of working in the NHS impact on staff and also which aspects of well-being influence patient care.

This study aims to evaluate the well-being of doctors in training and compare this with quality of care provided to patients attending the emergency department (ED). The relationship between well-being and quality of care aims to identify key aspects such as motivation, job satisfaction, and confidence that impact on quality of care. The measures will have the potential to be developed into a tool that may be utilised more widely for doctors in the NHS.

The study will comprise surveys of doctors in their second year of training (FY2 doctors) who are working in the ED as part of this year. The survey will collect data relating to doctor well-being, motivation, job satisfaction, professional identity, confidence and competence. These data will be compared with quality of care provided by these doctors through an examination of patient records detailing care given to patients.

It is anticipated that this study will identify key factors in the experiences of FY2 doctors that can improve well-being, motivation and job satisfaction and that directly link to improvements in the care of patients.

Research Outline

Introduction

This study aims to evaluate the well-being of doctors in training and explore the association with the quality of care provided to patients attending the ED.

In 2005 all UK Deaneries introduced Foundation Programmes as the initial phase of Modernising Medical Careers (MMC) for doctors in training as 2 year holistic programmes,suited for medical graduates.

The Emergency Department (ED) is a complex and challenging training environment for doctors. Specifically, it encompasses patients with a wide range of presenting clinical conditions, where doctors in training work autonomously and often act as the main decision makers in patient care. In this sense it is ideal as a study context to link doctor well-being with quality of patient care. In most other clinical specialties it would be hard to ascribe care solely to doctors in training as they more often work within a clinical team comprising a number of clinicians.

The study will comprise a longitudinal survey of doctors in their second year of training (FY2 doctors) who are working in the ED as part of this year. The survey will collect data relating to doctor well-being, motivation, job satisfaction, professional identity, confidence and competence. These data will be analysed along with the data collected on quality of care provided by FY2 doctors, by a clinical records review and analysis of routine performance data. Finally, measures of FY2 doctor well-being which are found to be strongly associated with patient care will be identified for future development into a validated tool that may be utilised more widely in the NHS.

Aims

- to identify how the experiences of FY2 doctors training in EDs impacts on their well-being, motivation and job satisfaction.
- to evaluate how the well-being and motivation of FY2 doctors in EDs impacts on the quality of patient care
- to identify key measures of FY2 doctor well-being and motivation, which impact on quality of patient care and which will underpin the development of a tool to monitor well-being and motivation during training.

Objectives

Undertake a longitudinal study within at least 15 English EDs to evaluate FY2 doctor well-being, motivation and job satisfaction and compare this with quality of patient care. The components of this phase will be to:

- Use a structured survey to assess FY2 doctors working in the ED in terms of their well-being, motivation and job satisfaction. In addition, issues of professional identity, confidence and competence will be explored.

- Assess patient safety and quality of care by FY2 doctors by:

    - a review of clinical records of patients receiving emergency care from these doctors
    - examining routine ED data to link workload, casemix, mean waiting times and four-hour performance between the EDs.

Examine the findings from the study in order to:

- Evaluate the relationship between FY2 doctor well-being, motivation and patient care
- Identify best practice models of FY2 doctor training which might be generalised and implemented across the NHS in order to promote a healthy and productive Foundation doctor workforce
- provide a starting point for the development of a tool that can be developed to monitor the well-being, motivation and training of doctors in emergency medicine and other specialities.

Background, including NHS context and relevant literature

NHS context

Recent initiatives have been introduced into the NHS designed to improve the organisation and conditions of work and hence workforce well-being. The impact on NHS staff of inadequate working conditions has been of increasing interest to policy makers, with issues such as poor recruitment and retention of staff negatively impacting on healthcare effectiveness. [1] [2] These initiatives have highlighted the importance of support within organisations for the effective development of individuals, with clarity about what is required from a post, in order that they meet their potential.

Importance of training on doctor well-being and patient outcomes

The link between staff development, motivation and well-being and the impact on patient care is recognised as important. [3] [4] Training and appraisal have been identified in the literature as an important element in appropriate people management, impacting on knowledge and skills, job satisfaction and well-being, which in turn may influence patient outcomes. [5] Previous studies have demonstrated relationships between the quality and extent of training and appraisal with psychological well-being of staff and better patient care. [6] [7] [8] [9] [10]

There is limited evidence of direct association between factors which effect performance and outcomes in health care and that would be important to take into account when studying a changing workforce. In one study [9] which sought associations between organisational practice and clinical outcomes, it was possible to demonstrate a linkage between good Human Resources practice (such as appraisal and training) and effective teamwork with reduction in
measures of patient mortality. A further study [11] demonstrated, in a non-health care setting, that organisational climate (e.g. skill development, concern for employee welfare) was significantly associated with productivity and profitability, and that the relationship was mediated by employee job satisfaction.

There is an increasing literature on links between patient safety and organisational culture and climate, with a range of tools and interview methods proposed. [12]

Training doctors in the NHS

Recently doctor training has undergone change in response to policy initiatives to improve the quality of patient care. The introduction of Modernising Medical Careers (MMC) in 2005 [13] was in response to perceived longstanding problems with the job structure, working conditions and training opportunities in postgraduate medical education. Training posts were criticised for being short term, stand-alone and not part of a clearly identified training programme, while supervision and assessment was judged as variable. These issues called into question whether doctors were being appropriately trained to meet the demands of a modern, patient-centred NHS. [14]
The first stage of MMC reform introduced a two year, Foundation Programme (Foundation years 1 and 2) to address these perceived deficiencies. Postgraduate training now is structured around a formal programme with a national curriculum and structured assessment of clinical competencies.

A recent inquiry into MMC [15] has highlighted a number of areas of concern with the foundation training model; variability in the quality of the year 2 placements and doctors not reaching appropriate levels of clinical responsibility when compared with their SHO predecessors. These issues have the potential to impact on the well-being and motivation of doctors and also on quality of patient care provided by them.
The report recommended greater clarity about what role FY2 doctors are expected to play in

the healthcare team and what their service contribution should be. A further period of re-structuring of postgraduate training now seems possible and this may affect the Foundation Programmes and hence the first stages of a doctors career.

Importance of evaluation
There is a need for better quality research evidence to fully investigate the nature of causal links between doctor training, other aspects of people management and their impact on psychological aspects of this workforce and patient outcomes. Studies need to incorporate a longitudinal element into their design, need to be adequately powered and need to incorporate validated measures in order to better establish these causal links. [16]

It is crucial that initiatives designed to improve the knowledge, skills and well-being of the workforce, are evaluated and monitored. There is also a need for the development of standardised measures of factors such as well-being and job satisfaction that impact on patient care, which can provide meaningful comparative data across organisations and to act as a baseline for future studies. [17]
The ED is in a unique position to provide an excellent broad based experience for foundation doctors in a challenging, high profile environment where there is the need to demonstrate safe and effective care and decision making in the context of rising demand and scarce resources. This makes the ED an appropriate setting for this proposed evaluation.

Evaluating new ways of working requires new ways of measuring their effect. It is proposed therefore to use surveys and a quality records review using validated, relevant instruments to collect longitudinal data from doctors operating in a range of emergency medicine working environments, and also data from the patients they treat. This data will be analysed to evaluate the well-being and motivation of FY2 doctors and the quality of care they provide. The relationship between well-being and motivation and quality of patient care will also be evaluated. The identification of important measures of doctor well-being that can be linked with patient care may allow the further development of tools for wider use within the NHS to monitor and evaluate doctors in training.

Plan of investigation

A longitudinal observational study will explore and measure FY2 doctors' experiences and the experiences of patients. Within the participating EDs the study will involve three successive cohorts of FY2 doctors. This will include:

1. *FY2 doctor survey*
A survey of all FY2 doctors to assess aspects such as well-being, motivation, job satisfaction, professional identity, confidence and competence;
- prior to commencing year 2 of their training rotation
- at the end of year 2 of their training rotation
- at the beginning and end of each ED placement.

2. *Quality of patient care*
To assess patient quality of care we will undertake a safety and clinical records review to evaluate quality of care. In addition, we will collect routine data from each ED such as waiting times, four-hour performance, workload and work rate of the FY2 doctors

3. *Identification of measures for future development*
Analysis of this data over time will enable the relationship between quality of patient care and FY2 doctor well-being and motivation to be identified both within each ED and between them. Important measures will be identified that can be developed further into a validated tool for more widespread use in monitoring doctor performance throughout training.

Methods (including the plan of analysis)

Longitudinal study

All English EDs will be approached for participation in the study. It is anticipated that at least 15 EDs will participate. Three successive cohorts of FY2 doctors will be surveyed in order to ensure evaluation of these doctors at key stages in the FY2 year. This longitudinal study will analyse both the workforce well-being and motivation of FY2 doctors and the quality of patient care being provided by them in the ED setting. There are three main elements:

1. FY2 doctors:

Doctors eligible for this study are all those entering the second year of foundation training, where one of their four-month posts is in the specialty of emergency medicine.

All eligible doctors will complete a survey at the beginning and the end of their second year. Up to two further surveys will be completed by doctors to ensure each is surveyed at the beginning and the end of each four-month ED post (see figure 1). Each survey will measure well-being, motivation, job satisfaction, professional identity, confidence and competence and therefore anticipated changes over time in these variables will be measured.

It is anticipated that the main headings of the survey will include:

- **Generic measures**: Well-being, [18 19] motivation, [20] job satisfaction, [21] professional identity, [22] confidence in role [23]
- **Programme** / **training measures**: Mentorship, formal teaching, formal assessments, feedback [24]
- **Emergency department measures**: Environment - workload, casemix, peer support, competence in role, job characteristics.

The survey will be administered by post or electronically, depending on local preferences. Data will be analysed to provide understanding of the differences in job perceptions and attitudes that exist within and between participating EDs, between doctors and over time.

2. Patients:

Quality of care will be assessed using a clinical records review. Record review has become an established method of examining the quality of care provided by a health care organisation. [25] Members of the research team have refined these methods in a major study on the reliability of review methods. [26] The proposed study will use a combination of approaches to derive a quality and safety of care rating for each FY2 doctor. Middle grade doctors in emergency medicine will be recruited from each participating ED to act as reviewers in their own hospital as would happen with clinical audit. Ten clinical records per doctor will be randomly selected from a specified period during their time working in the ED. The records will be reviewed using the implicit approach method. [27 28]

To assess reliability, two reviewers will independently assess the same set of records at one time point in six of the participating EDs. Training will be provided for all reviewers.

3. Service:
Routine data will be collected from each participating ED to assess service performance within EDs over the study time period and also compare across EDs on the proportion of patients seen within the four-hour target, mean waiting times, casemix, workload and work rate of FY2 doctors.

Statistical Issues

1. Sample Size

Foundation doctor sampling
We plan to include a sample size of 210 FY2 doctors from across EDs in England.

Firstly we hypothesise that the job-related well-being of FY2 doctors, measured by the 6-item anxiety-contentment and 6-item depression-enthusiasm dimensions of the Warr job-related well-being scale[18], will change over the duration of the training. Having employed surveys immediately pre- and post- training to capture this information:

- Assuming a correlation of r = 0.4 between the pre- and post- tests scores, to detect a 0.2-unit change in anxiety-contentment, (which, given the estimated standard deviations of these measures from published benchmarking data[29] on a comparable sample would be classified as a medium effect size, at the $p < 0.05$ level of significance, with 95% power, would require a sample size of 210 cases.

- Assuming a correlation of r = 0.4 between the pre- and post- tests scores, to detect a 0.2-unit change in depression-enthusiasm, (which again, given the estimated standard deviations of these measures from published benchmarking data[29] on a comparable sample, would be classified as a medium effect size), at the $p < 0.05$ level of significance, with 95% power, would require a sample size of 170 cases.

Secondly we hypothesise that the job satisfaction of FY2 doctors, measured by the 15-item, 7-point response scale Job Satisfaction scale[21], will change over the duration of the training. Assuming a correlation of r = 0.4 between the pre- and post- tests scores, to detect a 0.25-unit change in Job Satisfaction, (which, given the estimated standard deviations of these measures from published benchmarking data on a comparable sample[29], would be classified as a medium effect size), at the $p < 0.05$ level of significance, with 95% power, would require a sample size of 170 cases.

Finally, we hypothesise that both the well-being and the job satisfaction of FY2 doctors at the end of the study, and the change in these outcome variables will vary significantly across the EDs. The nested nature of our sample (i.e. a sample of doctors, within a sample of hospitals) will result in a multilevel data set, with two sample sizes to consider; that of doctors within each hospital, and that of the hospitals. The sample size of the higher level, in our case, hospitals, is almost always the restrictive element in such designs.

We envisage that there will be on average 24 FY2 doctors in each participating ED during the 12 month period of the longitudinal study. If we assume a 20% non-response within each ED, and a further 20% loss of paired cases between pre- and post-placement surveys across the sample, then this will give us a final sample of around 14 FY2 doctors per department. In order satisfy the most stringent of the power analyses above, this will mean recruiting at least 15 EDs.

2. Data analysis

Descriptive statistics and exploratory analysis of the outcome and predictor variables in the surveys will be summarised by tabulation of mean scores (or medians where their distribution makes this the more appropriate summary statistic), both for the whole sample

and split by ED. Bar charts will be employed to illustrate differences between EDs. Where variables are measured at multiple time points summary statistics will be displayed for each time point, and graphically illustrated by line graphs showing the changes over time.

A variety of inferential statistical techniques will be used to test hypotheses, which will of course develop as the study progresses. Initially, to assess the impact of predictor variables on the final levels of our key outcomes, multiple regression will be used, with background and demographic variables entered into the model first, followed by the predictor variables of primary interest.

When assessing and predicting change in outcomes over the period of doctor training, a variety/number of different methods will be employed;

- Paired t tests, or non parametric equivalent, to assess the extent of any change
- Repeated measures/mixed ANOVA to assess whether any change found differs by factors defining sub groups of the data (gender, age, previous placements).
- Multiple regression, with the dependent variable being the end of training measure of the outcome, and with the time one measure of the outcome entered as the first predictor, followed by the predictors of primary interest, to see whether these latter predictors are related to the change over time.

Finally, to enable us to best describe the effect of departments on our outcome, (and on the relationship between these outcomes and our predictor variables), through partitioning the variants of outcomes into between - and – within- hospital portions, and modelling each portion appropriately; we will use hierarchical linear modelling (aka multi level modelling). Initially this will be via a 2 level model (doctors nested in hospitals), but may extend to a 3 level model (observations over time in doctors nested in hospitals), with the non-independence of the repeated measures of doctors modelled by an auto regressive correlation structure. Such a longitudinal hierarchical linear model will enable us to include data from those cases which have responded at only one time point thus boosting the power of the analysis.

Cases with missing data on one or more variables will most likely be deleted on an analysis by analysis basis, having first checked for the existence of non random and systematic missing data. Assumptions regarding the sample attrition over time have been built into our sample size calculation; note also that the hierarchical linear modelling techniques outlined above will enable us to include respondents who have not replied at all time points in our longitudinal analyses.

Main Outputs

1. Workforce Outcomes:
   - FY2 doctor, well-being, motivation and job satisfaction
   - Differences in FY2 doctor well-being, motivation and job satisfaction compared across EDs
2. Patient Outcomes:
   - Score on safety and quality of clinical care provided by FY2 doctors following the records review
   - FY2 doctor performance, perceived confidence and competence over time

3. Service outcomes:
    - ED performance measured by mean waiting times, four-hour performance, workload and work rate of FY2 doctors

    - Recommendations for best practice regarding the implementation and delivery of FY2 training in acute NHS settings in order to optimise patient care.

4. Research outcomes;
    - Identification of measures of well-being and motivation that may be further developed into a validated generic tool for use in foundation training.

Plans for dissemination of results

The results will be disseminated as:

- Final report to the NIHR SDO detailing the findings in relation to the aims and objectives
- Workshops held at the end of the study to disseminate the findings from the study.
- The first will be for key stakeholders such as deanery, PMETB, GMC and MMC representatives.
- The second will be for participating Trusts, EDs and patients.
- A report for distribution to policy makers, the College of Emergency Medicine and academy of Royal Colleges, the GMC, PMETB, MMC team and MMC Inquiry team, regional postgraduate deans, foundation school directors and local training leads and trainers
- A series of research papers for publication in relevant peer reviewed journals.
- Presentation of the findings at relevant health services research, medical education and emergency medicine meetings.

Project timetable

Planning and preparation of the study (months 1-5)

Data collection (months 6-18)

- FY2 doctor survey over three cohorts of doctors in 12 EDs
- A records review approach to assessing the quality and safety of care provided to patients by FY2 doctors
- Collection of routine data from the 12 participating EDs.

In the final 6 months we will undertake:

- Analysis of data
- Writing up of the study results
- Production of the final report
- Dissemination of the results including workshops to feedback findings to participants.

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