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TITLE

Healthcare employee engagement and healthcare service quality ratings: analysis of the 2012–2016 National Health Service staff surveys and the concurrent Care Quality Commission outcomes

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Abstract

Objective This research looks at measures of employee engagement in NHS acute Trusts in England and tests the association between organization-level engagement and the CQC's quality ratings.

Design Cross-sectional.

Setting 97 acute NHS Trusts in England.

Participants 97 NHS acute Trusts in England (2012–2016). Data includes provider details, staff survey results and CQC reports. Hybrid Trusts or organizations affected by recent mergers are excluded.

Outcome Measures Analysis uses organization-level employee engagement and CQC quality ratings.

Results Employee engagement is affected by organizational factors, including patient bed numbers (β=-0.46, p<0.05) and financial revenue (β=0.38, p<0.05). CQC ratings are predicted by overall employee engagement score (β=0.57, p<0.001) and financial deficit (β=-0.19, p<0.05). The most influential employee engagement dimension on provider ratings is 'advocacy' (λ=0.54, p<0.001). Analysis support the notion that employee engagement can be predicted from advocacy scores alone (eigenvalue=4.03). Better still, combining advocacy scores from the previous year's survey or adding in motivation scores is a highly reliable indication of overall employee engagement (95.4% of total variance).

Conclusions NHS acute Trusts with high employee engagement scores tend to have

better CQC ratings. Trusts with a high financial deficit tend to have lower ratings. Employee engagement subdimensions have different associations with CQC ratings, the most influential dimension being advocacy score. A two subdimension model of engagement efficiently predicts overall employee engagement in NHS acute Trusts in England. Healthcare leaders should pay close attention to the proportion of employees who would recommend their organization as a place to work or receive treatment, because this is a proxy for the level of engagement and it predicts CQC ratings.

Article Summary

Strengths and limitations of this study

- Data is from a large national employee survey. A study investigating the link between measures of employee engagement and perceived quality in secondary healthcare providers.
- The employee engagement results coincide with the first national inspection programme of acute NHS Trusts, by the CQC.
- A conceptual model is used to test the associations between the subdimensions of employee engagement and perceived quality (as measured by the CQC).
- The predictor variables are taken from a single self-reported source which risks common method variance.
- The sample and cross-sectional design limit conclusions about causation or generalizability.

Introduction

This study considers organization-level measures of work engagement taken from the annual National Health Service (NHS) staff surveys (NSS) 2012–2016.[1] It examines the effect that organizational size, status and financial revenue have on overall engagement and compares engagement scores to Care Quality Commission (CQC) ratings for NHS acute Trusts in England. Employee engagement research typically uses a multidimensional construct of engagement, so the study applies this approach to the NHS. It investigates the associations between engagement subdimensions and the perceived quality of provider organizations.

Organizational factors

The structure of healthcare organizations has been linked to measures of performance such as efficiency, patient outcomes, staff and patient satisfaction. [2-3] There has been an inference that as far as improving outcomes of healthcare are concerned, “bigger is better” but the evidence for such a general assertion is weak.[4] In the United Kingdom (UK), employee recruitment and retention has historically been easier in large, prestigious teaching hospitals based in cities or Foundation Trusts with large numbers of inpatient beds and considerable resources at their disposal. In the broadest sense, resources promote employee engagement and well-being and to some extent protect workers from the demands of their jobs.[5] Previous healthcare studies have also shown that the type of organization and available job resources are linked to engagement levels amongst nurses, doctors and other healthcare professionals in several countries.[6-8]

This research examines the results of recent NHS staff surveys for evidence that employee engagement is linked to organizational characteristics. We follow on from the work of West et al.[9] and West and Dawson[10] to construct the following hypothesis (H1):

H1: NHS employee engagement will be related to Trust size, type (Foundation/non-Foundation), status (teaching/non-teaching hospital) and financial position.

Employee engagement and performance (CQC ratings)

The proposition that employee engagement has a positive effect on organizational performance is not new.[11] Employee engagement has been associated with improved performance in many industries albeit there is limited healthcare evidence. Engaged employees tend to be intrinsically motivated, are more likely to achieve goals and learn from mistakes, which can affect organization-level quality outcomes.[12-14] For example, healthcare organizations with more engaged employees tend to deliver better patient care and have superior safety records compared to those with less engaged employees.[12]

One controversial measure of NHS performance is the use of CQC healthcare provider ratings by the Department of Health and Social Care. In 2016, the CQC completed the first national inspection programme of NHS acute Trusts in England and rated each organization as: outstanding, good, requires improvement or inadequate. Some variation was attributed to organizational factors such as culture, leadership and staff engagement.[15] It follows therefore that employee engagement is worth investigating as a predictor of CQC ratings. This study compares CQC

measures of performance in NHS acute Trusts with their NSS employee engagement scores, based on our second hypothesis (H2):

H2: Overall employee engagement scores taken from staff surveys in NHS acute Trusts predict their CQC ratings.

Employee engagement dimensions

The NSS attempts to reflect employee engagement in the context of the organization and its environment, with overall-engagement scores synthesized from three subdimension scales: motivation, advocacy and involvement. NSS motivation is similar to psychological engagement and includes elements of intrinsic motivation, dedication and absorption at work. Advocacy is strongly linked to care standards and reflects the perceptions that staff have of the organization's patient-centredness and the level of pride they feel at work. It also reflects the willingness to recommend the organization as an employer or healthcare provider. Involvement is a "practitioner" measure which covers employee involvement in decision-making, change management and relationships with supervisors.[10]

Employee engagement is generally considered to be multidimensional, linked to levels of energy, dedication, involvement, intrinsic motivation, absorption and connection to others. Schaufeli and Bakker[13] defined engagement as a "positive, fulfilling, work-related state of mind characterized by vigor, dedication and absorption". This three-dimension construct has been widely adopted; indeed Simpson[7] recommended it be applied to all nurse-related engagement research in order to provide a comparative approach. Vigour was associated with energy, resilience, persistence and greater effort

which relates to the NSS motivation dimension. Dedication was characterized by involvement and associated with a personal sense of significance, pride, inspiration and challenge which can be linked to the NSS involvement and advocacy dimensions. The third sub-dimension (absorption) is difficult to link to NSS instruments.

Recent studies have suggested that employee engagement is better represented by a two-subdimension model. For example, Salanova et al.[16] published a report in which only two of Schaufeli and Bakker's[13] dimensions predicted employee engagement, namely vigour and dedication. In Salanova et al.'s study, absorption was considered a consequence of employee engagement not an antecedent. This debate about the antecedents of employee engagement informs our third hypothesis (H3) which is:

H3: Engagement is calculated from three subdimension scales in current NHS survey instruments. The associations between these subdimensions and overall engagement should identify the 'core dimensions' for NHS employees. (Figure 1)

Methods

Organization type reportedly has an effect on NSS.[10] For consistency, this research focuses on NHS acute Trusts, whilst organizations in unusual circumstances (recent mergers, acquisitions or significant reconfigurations) and hybrid organizations (mixed community and acute services) are excluded. The resulting sample is 97 NHS acute Trusts in England. This study does not include NHS services in the rest of the UK, as they fall under different regulatory arrangements. Although this study uses Trust-level data, representativeness and comparability are assumed because a weighting procedure is applied to NSS returns based on a hypothetical national staff profile for each type of organization. To allow for historical comparisons, data weighting is regularly reviewed.[17]

Organization characteristics

All data is publicly available in the UK on NHS acute Trust websites, including NHS Trust Board papers and quality accounts. Organizational characteristics are selected to reduce confounding effects. For example, acute Trusts in England have a wide range of operating incomes that directly affects available resources. Trusts with significant financial deficits can have constraints on resources so the size of Trust deficit as a percentage of financial turnover is controlled. Although bed numbers are an indicator of organizational size, it may also reflect an element of work intensity, and so could affect performance. Teaching hospitals affiliated to reputable academic organizations have been associated with higher performance, so teaching status was also controlled for in the analysis.[2-3] 'Foundation Trust' status was originally awarded to higher-performing NHS organizations and was intended to give them more autonomy and greater financial

flexibility; and therefore is likely to impact on culture, climate and resources.

Engagement and performance (CQC ratings)

NHS acute Trust data was extracted from NSS reports. For each Trust, survey data corresponding to the year of their CQC inspection and the previous year is used. The mean average annual response rate for acute Trusts for 2012–2016 is: 49% (2012–13), 42% (2013–14), 41% (2014–15) and 43% (2015–16) respectively, comprising between 269,000 and 456,000 respondents per survey year.

Overall employee engagement for each respondent is created by taking the mean average from the dimension scores (Cronbach's alpha=0.70). Trust-level engagement scores are summarized for each organization using the weighting procedure described above. Organization scores are then compared to the national average for organizations of a similar type. Benchmark data is obtained from the summary reports provided to individual NHS Trusts.[17]

The CQC inspected all 136 acute Trusts and 17 specialist Trusts in England in the period September 2012–June 2016 and published the results on their website. This included a total of 265 non-specialist hospital sites or locations and 27 specialist hospitals operated by these Trusts. Assessment of core health services included: children and young people, intensive/critical care, maternity and gynaecology, end of life care, outpatients and diagnostic imaging, surgery, urgent and emergency services and medical care including older people. In making their assessments, the CQC uses a set of 150 indicators obtained from various sources (including inspection visits). They rate organizations under five domains (safe, effective, caring, responsive and well-led). Each organization receives an overall rating as: outstanding, good, needs improvement or

inadequate.[15] (Supplementary Table 1)

NSS dimensions of employee engagement

As discussed, a three subdimension model of employee engagement is captured in the NSS. Each dimension is scored across a number of items, using a five-point scale or yes/no answers. Data is collated by the Picker Institute, who then produce individual Trust reports.[17] (Table 1)

Table 1: The NHS staff survey calculates overall engagement from three scales: motivation, advocacy and involvement.

Dimension	Description
Motivation	Staff motivation at work (Cronbach's alpha=0.81)
Advocacy	Recommend the organization as a place to work or receive treatment (Cronbach's alpha=0.74).
Involvement	Ability to contribute towards improvement at work (Cronbach's alpha=0.86).

Patient and Public Involvement

Patients and public were not involved in this study.

Results

Employee engagement is treated as an organization-level variable. Scatter plots of standardized residuals show a roughly rectangular distribution with central clustering, so the assumption of linearity is met. There is no evidence of a systematic pattern of residuals and there are no residuals outside the accepted range for Trust-level data. Only two organizations have Mahalanobis distances greater than the critical value (e.g. χ^2=18.47 for 4 degrees of freedom) which is around the 2% recommended tolerance. Similarly, Cook's distances are <1, so the outliers do not have an undue influence on the predictability of the model. As a result, no acute Trusts with complete data sets are excluded.

Organizational factors and employee engagement

Employee engagement is compared to Trust size (financial turnover, bed numbers), type (Foundation/non-Foundation) and teaching status (teaching/non-teaching hospital). Univariate analysis of variance (Anova) shows that the model is statistically significant compared to chance ($p<0.05$). Regression analysis is used to quantify the % variance in employee engagement explained by the predictor variables (R^2=0.104, adjusted R^2=0.064, standard error=0.09). This suggests that the combined predictors explain 6-10% of the variance. The significant contributions are bed numbers (β=-0.46, $p<0.05$) and financial turnover (β=0.38, $p<0.05$).

Employee engagement and performance (CQC ratings)

The data is analyzed using hierarchical multiple regression: block 1 comprises control variables (financial deficit as % turnover, bed numbers, and Trust status) and block 2 Trust engagement scores (Supplementary Table 2).

In this way, the model assesses the contributions of predictor variables to the variance in the dependent variable. The model is a statistically significant predictor of CQC ratings (Anova; F=11.42, p<0.001). The combined effect of the model's variables is 39% of CQC ratings variance. The control variables account for approximately 10% of CQC ratings. The change in R^2 (ΔR^2) in block 2 shows that engagement scores account for an additional 29% of variance (p<0.001, standard error=0.53). The statistically significant predictors are financial deficit (β=-0.19, p<0.05) and engagement score (β=0.57, p<0.001). The regression coefficients are shown in Table 2.

Table 2: **Hierarchical multiple regression – the conceptual model predicts CQC ratings. Engagement scores and Trust financial deficits are the significant predictors.**

	Unstandardized coefficients		**Standardized coefficients**	**Change statistics**			
	R	R^2	Adjusted R^2	Std.error	ΔR^2	ΔF	p value
Controls[a,b]	0.312	0.097	0.057	0.638	0.097	2.423	.054
Full model[a,c]	0.625	0.391	0.357	0.527	0.294	42.891	<0.001***

a. Dependent variable: CQC rating; *p<0.05, ** p<0.005, *** p<0.001

b. Predictors: (Constant), Deficit %, FT or non FT, Teaching status, Bed numbers

c. Predictors: (Constant), Deficit %, FT or non FT, Teaching status, Bed numbers, Engagement score

Employee engagement dimensions and perceived performance

Discriminate analysis is used to assess the ability of the employee engagement dimension scores to predict CQC ratings (Supplementary Table 3). The assumption of multivariate normality is met with Box's M, $p>0.05$. Univariate Anova suggests a statistically significant difference between the three engagement dimensions. Canonical discriminate functions show a statistically significant relationship between the discriminating function (1) and the engagement subdimension scores. The (eigenvalues) canonical correlation=0.67, demonstrating good group separation by a discriminate function. That function explains 95.7% of the variance between the engagement dimensions ($\lambda=0.54$, $p<0.001$). Analysis shows that the factor driving discriminate function 1 is advocacy score, with the largest absolute correlation=0.96 (Table 3).

Table 3: **Discriminate analysis – the intercorrelations and correlations between engagement subdimensions and CQC ratings can be represented by a non-correlated discriminate function (Function 1).**

Function	Eigenvalue	% of variance	Cumulative %	Canonical correlation
1	0.801	95.7	95.7	0.667
2	0.036	4.3	100.0	0.185
3	0.000	0.0	100.0	0.020

Core dimensions of employee engagement in the NHS

Principal component analysis is used to test for a latent effect using data from the year of and the year before (Yb4) CQC inspections. Standard assumptions are met (sample >10 subjects per variable, strong intercorrelations r>0.3, Bartlett's test p<0.001, Kaiser Myer Olkin=0.76). The component matrix supports retaining a 1-factor solution since only 1 component had eigenvalue>1. The retained factor is advocacy score (eigenvalue=4.03), which explains approximately 67% of the total variance in the engagement data. By adding advocacy scores from the year before CQC inspections this increases to 80%. Combined advocacy and motivation scores from both years explain 95% of the total variance (Table 4).

Table 4: **Principal component analysis – advocacy scores from the year of and year before CQC inspections effectively predict employee engagement. Combined advocacy and motivation scores are a reliable indicator of overall engagement which can be efficiently represented by a two dimension model.**

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1.Advocacy	4.033	67.223	67.223	4.033	67.223	67.223
2.AdvocacyYb4[a]	0.748	12.462	79.684	-	-	-
3.Motivation	0.545	9.088	88.772	-	-	-
4.MotivationYb4[a]	0.398	6.629	95.401	-	-	-
5.Involvement	0.182	3.042	98.442	-	-	-
6.InvolvementYb4[a]	0.093	1.558	100.000	-	-	-

[a]Yb4 = year before CQC inspection

Discussion

Simpson emphasized how organizational factors, job attributes and leader behaviours affected the engagement of nurses.[7] However, our findings emphasize that nuancing is required over any notion that organizational structure has a strong effect. Our analysis shows that Trust size, type and status explain 6-10% of the variance in engagement scores which only partially supports our first hypothesis. Although the size of NHS acute Trusts is related to engagement scores, the two indicators of organizational size had opposite associations. Trusts with higher incomes (turnover) tended to have more engaged employees but organizations with more beds had lower engagement. Parsimoniously, we speculate that the most influential organizational factors on engagement are related less to structure and more to employees' perceptions of the culture, leadership style and their working environment.[18] Conceptual models tend to consider engagement in terms of job demands, job resources and personal resources[14,19-20]. In this context, the demands of a job or the available resources extend beyond: management styles, work intensity, materials or equipment, to include: employee autonomy, social support, optimism, coaching, feedback, personal development, self-efficacy and self-esteem. Adequate resources are an important motivational force at work because they reduce the perceived demands of a job, particularly when work intensity is consistently high.[21] Maumo et al.[6] reported that the loss of these resources can produce a downward spiral, particularly when employees sense a loss of autonomy or the inability to control aspects of their work. There is growing interest in workplace factors that influence employee engagement due to the apparent effect that engagement has on organization-level performance and

personal well-being. Reported benefits to businesses included: improved productivity, profitability and customer satisfaction.[14,19,22-23] Engagement research in healthcare settings tends to focus on health outcomes or quality metrics rather than business performance. For example, West and Dawson (2012) reported that levels of employee engagement predicted hospital quality ratings (in addition to mortality, infection rates, patient satisfaction and absenteeism). However, these studies were based on survey data from 2008-2009. Although the regulatory regime and some of the outcome measures have changed, our study suggests that the link between employee engagement and quality ratings has been maintained in UK secondary care providers.[10]. This finding supports our second hypothesis and is consistent with reports from many different industries of a positive link between engaged employees and improved performance.

Engagement is generally considered to be a multidimensional construct[13] and, adopting this approach, the NSS uses a three subdimension model to assess overall engagement. This study suggests that advocacy is the most influential dimension on CQC ratings. Better ratings tended to occur in organizations where employees thought the care of patients or service users was the organization's top priority and when they would recommend their organization as a place to work or receive treatment. This supports our third hypothesis and is consistent with CQC[15] which reported that "staff in Trusts that have received higher ratings tend to recommend their organisation as a place to work and/or receive treatment". Analysis suggests that advocacy scores explain most of the variance in overall engagement scores. This implies that NHS employee engagement could be efficiently predicted by simply determining advocacy

scores in future surveys. Alternatively, overall engagement could be reliability assessed by using a two subdimension model of engagement (advocacy plus motivation). This is consistent with Salanova et al.[16] and Maumo et al.[6] who reverted to a two-dimension model of engagement, concluding that vigour and dedication were the core dimensions of engagement in healthcare workers.

The CQC highlights that financial pressures in provider organizations are associated with lower quality ratings, which is supported by the finding in our study: NHS acute Trusts with higher financial deficits as a proportion of their turnover tend to achieve lower CQC ratings. Although the CQC reported that good internal financial management is linked with better hospital ratings, this should be taken in the context of the prevailing external environment (particularly the pressure to control costs and prioritize effectiveness). CQC ratings do not decipher between organizations that are “better at balancing their budgets” and the root causes of the financial “deficits” in challenged Trusts.[15] There are widespread calls for investment in the NHS but it remains to be seen what level of investment is needed to produce a ‘quality dividend’ for people receiving treatment in secondary care providers.

Conclusion

This study provides further empirical evidence of the positive effect that employee engagement has on the perceived performance of healthcare organizations. NHS acute Trusts with more engaged employees tend to have better CQC ratings. This research also provides new evidence that the NSS engagement dimensions have different associations with these ratings. Specifically, it shows that the most influential predictor of CQC ratings is advocacy score (emloyees think the care of patients and service

users is the organization's top priority, they would recommend their organization to others as a place to work and would be happy with the standard of care provided by the organization if a friend or relative needed treatment). Overall engagement in future NHS surveys could be reliability assessed by using a two subdimension model (advocacy and motivation) rather than current three dimension model.

Implications

Theoretically, senior managers are best placed to modify the working environment, provide resources, moderate job demands and create the conditions that foster employee engagement. However, the pressure to control costs and prioritize effectiveness may limit the impact of lessons learned from engagement research. Many people currently working in or being cared for in NHS acute Trusts in England are aware of the changing environment and recognize the pressures caused by externally driven reforms, high work-intensity and rising job demands experienced by many healthcare professionals. Alarmingly, these are the very conditions which have been associated with higher levels of employee burnout.[12]

Healthcare organizations interested in improving engagement and quality ratings should pay close attention to the proportion of employees who would recommend their organization as a place to work or receive treatment, because this is a proxy for the level of employee engagement and it predicts CQC ratings

Study limitations

The study uses a cross-sectional design which limits any conclusions about causation. Although the study period is 2012–2016, the data extraction was determined by the timing of CQC inspections, so a longitudinal design would better identify the factors

which consistently influence employee engagement and organizational performance. The study sample is limited to NHS acute Trusts in England, which limits the generalizability of the conclusions. The predictor variables are taken from a single self-reported source, therefore using different sources, more instruments or adding objective measurements would reduce common method variance.[7] Self-reported observations can exaggerate relationships amongst variables and cannot exclude effects due to latent variables. This research uses aggregated engagement scores whereas most previous studies have used non-aggregated scores. Shuck and Wollard[24] claimed that looking at engagement at the level of an organization rather than the individual may be necessary but it "distorts the nature of the concept".

Directions of future research

Improving healthcare quality is a high priority in developed economies and so research designed to identify factors that predict quality performance should be encouraged. Engagement as a predictor of employee or organization performance is supported by several empirical studies.[13,22] Research that overcomes the methodological issues identified in our study may provide stronger empirical evidence of the economic and healthcare benefits of an engaged workforce. Research has tended to focus on individual engagement but there is a clear need for more group-level studies particularly in service industries where many people work in teams.[16] To facilitate this research, the instruments currently used to measure individual engagement need to be tested at different levels of organizations.

Whilst acknowledging the recommendation that a common definition of engagement be used in future research it would nevertheless be interesting to test if the strong influence

of employee endorsement seen in our study, is more generalizable.[7]

Finally, future studies designed to identify the interventions that increase and maintain staff engagement will be of value to academia, business schools and HRM professionals alike.

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Footnotes

Contributions: MW conceived the research and carried out the statistical analysis. MW and WG contributed to the manuscript and approved the final version. Rabia Imtiaz provided some organizational details used in this research and independently verified the CQC ratings issued to acute Trusts in 2013-2016.

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Data sharing statement: Survey data are available from http://www.nhsstaffsurveys.com and https://www.cqc.org.uk

References

1. NHS England. NHS staff survey. www.nhsstaffsurveys.com/Page/1056/Home/ NHS-Staff-Survey-2016 (accessed 24 Jul 2018).

2. Papanikolaou PN, Christidi GD, Ioannidis JP. Patient outcomes with teaching versus nonteaching healthcare: a systematic review. *PLoS Med.* 2006;3(9):e341.

3. Sjetne IS, Veenstra M, Stavem K. The effect of hospital size and teaching status on patient experiences with hospital care: a multilevel analysis. *Medical Care* 2007; 45(3):252–8.

4. Brand CA, Barker AL, Morello RT, et al. A review of hospital characteristics associated with improved performance. *Int J Qual Health Care* 2012;24(5):483–94.

5. Demerouti E, Bakker AB, Nachreiner F, et al. The job demands–resources model of burnout. *J Appl Psychol.* 2001;86:499–512.

6. Maumo S, Kinnunen U, Ruokolainen M. Job demands and resources as antecedents of work engagement: a longitudinal study. *J Vocat Behav.* 2007;70(1):149–71.

7. Simpson MR. Engagement at work: a review of the literature. *Int J Nurs Stud.* 2009;46(7):1012–24.

8. Prins JT, Hoekstra-Weebers JE, Gazendam-Donofrio SM, et al. Burnout and engagement among resident doctors in the Netherlands: a national study. *Medical Education* 2010;44(3):236–47.

9. West M, Dawson J, Admasachew L, et al. NHS staff management and health service quality. Department of Health, 2011.

10. West M, Dawson J. Employee engagement and NHS performance. *The King's Fund* 2012:1–23.

11. Gruman JA, Saks AM. Performance management and employee engagement. *Hum Resour Manage R* 2011;21(2):123–36.

12. Laschinger HK, Leiter MP. The impact of nursing work environments on patient safety outcomes: the mediating role of burnout engagement. *J Nurs Adm.* 2006;36(5):259–67.

13. Schaufeli WB, Bakker AB. Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *J Organ Behav.* 2004;25(3):293–315.

14. Xanthopoulou D, Bakker AB, Demerouti E, et al. Reciprocal relationships between job resources, personal resources, and work engagement. *J Vocat Behav.* 2009;74(3):235–44.

15. CQC. State of Care 2016. www.cqc.org.uk/content/cqc-reveals-comprehensive-picture-quality-hospital-care-england (accessed 24 Jul 2018).

16. Salanova M, Lorente L, Chambel et al. Linking transformational leadership to nurses' extra-role performance: the mediating role of self-efficacy and work engagement. *J Adv Nurs.* 2011;67(10):2256–66.

17. Picker Institute. Making sense of your staff survey. www.nhsstaffsurveys.com/Page/1019/Past-Results/Staff-Survey-2016-Detailed-Spreadsheets/ (accessed 24 Jul 2018).

18. Fiabane E, Giorgi I, Sguazzin C, et al. Work engagement and occupational stress in nurses and other healthcare workers: the role of organisational and personal factors. *J Clin Nurs.* 2013;22:2614–24.

19. Bakker AB, Albrecht SL, Leiter MP. Key questions regarding work engagement. *Eur J Work Organ Psy.* 2011;20(1):4–28.

20. Nahrgang JD, Morgeson FP, Hofmann DA. Safety at work: a meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *J Appl Psychol.* 2011;71:1–24.

21. Hakanen JJ, Perhoniemi R, Toppinen-Tanner S. Positive gain spirals at work: from job resources to work engagement, personal initiative and work-unit innovativeness. *J Vocat Behav.* 2008;73(1):78–91.

22. Harter JK, Schmidt FL, Hayes TL. Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: a meta-analysis. *J Appl Psychol.* 2002;87(2):268–79.

23. Lowe G. How employee engagement matters for hospital performance. *Healthcare Q* 2012;15(2):29–39.

24. Shuck B, Wollard K. Employee engagement and HRD: a seminal review of the foundations. *Human Resour Dev Rev.* 2010;9(1):89–110.

Legends to figures and tables

Figure 1

Conceptual model – In annual employee surveys, NHS engagement scores are synthesized from three subdimension scores. The dimensions of engagement may have differential associations with CQC ratings (which are a controversial indicator of the perceived quality of NHS providers in England).

Table 1

The NHS staff survey calculates overall engagement from three scales: motivation, advocacy and involvement.

Table 2

Hierarchical multiple regression – the conceptual model predicts CQC ratings. Engagement scores and Trust financial deficits are the significant predictors.

Table 3

Discriminate analysis – the intercorrelations and correlations between engagement subdimensions and CQC ratings can be represented by a non-correlated discriminate function (Function 1).

Table 4

Principal component analysis – advocacy scores from the year of and year before CQC inspections effectively predict employee engagement. Combined advocacy and motivation scores are a reliable indicator of overall engagement which can be efficiently represented by a two dimension model.

Legends to supplementary tables

Supplementary Table 1

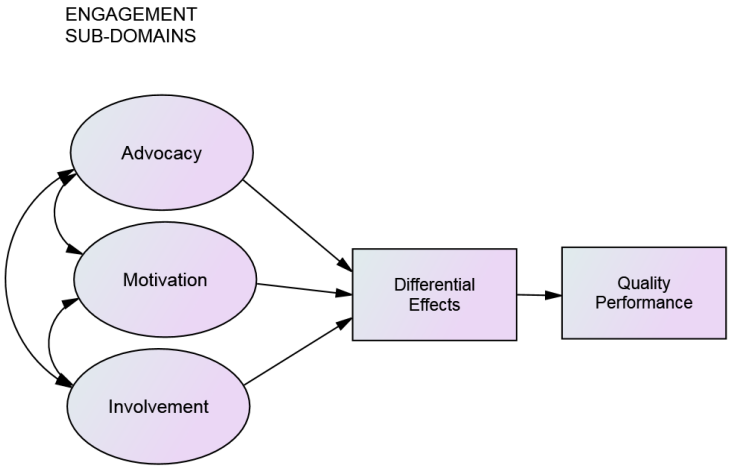
Schematic of CQC ratings matrix – Provider ratings are reported in five domains which are defined in the table

Supplementary Table 2

Descriptive statistics of study variables

Supplementary Table 3

Descriptive statistics for discriminate analysis – CQC rating categories and engagement subdomains are shown


ENGAGEMENT
SUB-DOMAINS
Advocacy
Motivation
Involvement
Differential Effects
Quality Performance

Rating	Domain	Definition
Outstanding Good Needs improvement Inadequate	Safe	protecting people from abuse and avoidable harm and is rated across 3 areas; culture, staffing and environment
	Effective	treatment and support achieves good outcomes, promotes a good quality of life and is based on the best available evidence
	Caring	staff involve and treat people with compassion, kindness, dignity and respect
	Responsive	services are organized so that they meet people's needs
	Well-led	leadership, management and governance of the organization assures the delivery of high-quality person-centered care, supports learning and innovation, and promotes an open and fair culture

	Mean	Std Deviation	n
CQC Rating	1.28	.657	97
Beds	837.5	361.149	97
Teaching	.30	.462	96
FT	.64	.484	96
Deficit %	4.235	4.28497	96
Engagement Score	3.798	.09571	97

CQC	Sub- domain	Mean	Std. Deviation	n
inadeq	Advocacy	3.5709	.14822	8
	Motivation	3.8915	.06785	8
	Involvement	.6636	.02418	8
reqim	Advocacy	3.6987	.14999	57
	Motivation	3.9188	.07190	57
	Involvement	.6933	.03892	57
good	Advocacy	3.8892	.10011	29
	Motivation	3.9504	.06329	29
	Involvement	.7124	.02287	29
outstnd	Advocacy	4.0748	.10995	3
	Motivation	3.9675	.02208	3
	Involvement	.7177	.02065	3
Total	Advocacy	3.7567	.17674	97
	Motivation	3.9275	.06994	97
	Involvement	.6973	.03568	97

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Effect of employee engagement on service quality ratings: analysis of the National Health Service staff survey across 97 acute NHS Trusts in England and concurrent Care Quality Commission outcomes (2012–2016)

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TITLE

Effect of employee engagement on service quality ratings: analysis of the National Health Service staff survey across 97 acute NHS Trusts in England and concurrent Care Quality Commission outcomes (2012–2016)

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Abstract

Objective This research looks at measures of employee engagement in NHS acute Trusts in England and tests the association between organization-level engagement and the CQC's quality ratings.

Design Cross-sectional.

Setting 97 acute NHS Trusts in England.

Participants 97 NHS acute Trusts in England (2012–2016). Data includes provider details, staff survey results and CQC reports. Hybrid Trusts or organizations affected by recent mergers are excluded.

Outcome Measures Analysis uses organization-level employee engagement and CQC quality ratings.

Results Employee engagement is affected by organizational factors, including patient bed numbers (β=-0.46, p<0.05) and financial revenue (β=0.38, p<0.05). CQC ratings are predicted by overall employee engagement score (β=0.57, p<0.001) and financial deficit (β=-0.19, p<0.05). The most influential employee engagement dimension on provider ratings is 'advocacy' (λ=0.54, p<0.001). Analysis support the notion that employee engagement can be predicted from advocacy scores alone (eigenvalue=4.03). Better still, combining advocacy scores from the previous year's survey or adding in motivation scores is a highly reliable indication of overall employee engagement (95.4% of total variance).

Conclusions NHS acute Trusts with high employee engagement scores tend to have better CQC ratings. Trusts with a high financial deficit tend to have lower ratings. Employee engagement subdimensions have different associations with CQC ratings, the most influential dimension being advocacy score. A two subdimension

model of engagement efficiently predicts overall employee engagement in NHS acute Trusts in England. Healthcare leaders should pay close attention to the proportion of employees who would recommend their organization as a place to work or receive treatment, because this is a proxy for the level of engagement, and it predicts CQC ratings.

Article Summary

Strengths and limitations of this study

- Engagement data is taken from a large national survey of NHS employees.
- The survey results coincide with the first national inspection programme of all acute NHS Trusts in England, by the Care Quality Commission (CQC).
- A conceptual model is used to test the associations between the subdimensions of employee engagement and perceived quality (as measured by the CQC).
- The predictor variables are taken from a single self-reported source which risks common method variance.
- The sample and cross-sectional design limit conclusions about causation or generalizability.

Introduction

This study considers organization-level measures of work engagement taken from the annual National Health Service (NHS) staff surveys (NSS) 2012–2016.[1] It examines the effect that organizational size, status and financial revenue have on overall engagement and compares engagement scores to provider ratings for NHS acute Trusts in England. Employee engagement research typically uses a multidimensional construct of engagement, so the study applies this approach to the NHS. It investigates the associations between NSS engagement subdimensions and the perceived quality of provider organizations (as reported by the Care Quality Commission).

Organizational factors

Saks[2] suggested that employees repay their organization for the resources they receive through their levels of engagement and to some extent engagement reflects the relationship employees have with their organizations. Maslach et al.[3] emphasized the important role that organizations play in providing these valued resources by allowing employees some autonomy or by providing feedback and learning opportunities. The engagement-promoting capacity of job resources was also identified by Bakker et al.[4] who described job resources as the physical, social or organizational factors which reduce job demands and play a motivational role at work. Job resources reduced the perceived demands of a job and appeared to protect employees from burnout, particularly during sustained periods of high work intensity. From a healthcare perspective, Hakanen et al.[5] in a longitudinal study of over 2500 Finnish dentists reported a positive, step-wise relationship between job resources, engagement and personal initiative or innovativeness. In another Finnish study

of 409 healthcare workers, Maumo et al.[6] concluded that the best predictors of engagement were self-esteem and the ability of employees to control some aspects of their work (job resources were more influential than job demands). Relatedly, job resources have been linked to engagement amongst nurses and doctors working in hospital environments.[7-8]

Several studies have linked the structure of healthcare organizations to measures of performance including efficiency, patient outcomes, staff and patient satisfaction.[9-10] There has been a reporting bias towards "bigger is better" but the evidence for such a general assertion is weak.[11] In the UK, recruitment and retention of staff has historically been more successful in large, prestigious teaching hospitals with considerable resources at their disposal. West et al[12] found that the type of NHS organization influenced employee engagement but the key organizational characteristics which predict employee engagement in an acute healthcare environment are uncertain. Consequently, this research examines the results of recent NHS staff surveys for evidence that employee engagement is linked to organizational characteristics using the following hypothesis (H1):

H1: NHS employee engagement will be related to Trust size, type (Foundation/non-Foundation), status (teaching/non-teaching hospital) and financial position. Higher levels of employee engagement may be associated with big teaching hospitals or Foundation Trusts.

Employee engagement and performance (CQC ratings)

The proposition that employee engagement has a positive effect on organizational performance is not new.[13] Employee engagement has been associated with

improved performance in many industries, albeit there is limited healthcare evidence. Engaged employees tend to be intrinsically motivated, are more likely to achieve their goals and learn from mistakes and engagement has been associated with organization-level quality outcomes.[14-16] Engagement amongst healthcare professionals is considered high compared to other industries and hospitals with more engaged nurses tended to deliver better patient care and have superior safety records compared to those with less engaged employees.[14] Although there are few studies from the NHS, the historical link between NHS engagement and quality was reported in West et al (2011). Staff engagement had a significant effect on patient satisfaction, hospital mortality rates, infection rates, absenteeism, staff turnover and Annual Health Check ratings (a forerunner of QCC ratings).

One controversial measure of NHS provider quality is the use of CQC healthcare ratings by the Department of Health and Social Care. In 2016, the CQC completed the first national inspection programme of NHS acute Trusts in England and rated each organization as: outstanding, good, requires improvement or inadequate. The CQC highlighted the variation in quality and attributed this to factors such as culture, leadership and staff engagement.[17] It follows, that employee engagement is worth investigating as a predictor of CQC ratings. Based on the literature, the direct relationship between engagement and perceived quality of NHS acute Trusts is expressed as our second hypothesis (H2):

H 2: There is a positive relationship between the levels of staff engagement and Trust performance so overall employee engagement in acute NHS Trusts may predict their CQC ratings.

Engagement subdimensions

Although Kahn[18] was the first to define work engagement as a multi-dimensional construct related to meaningfulness, safety and availability, subsequent developmental theories conceptualized engagement as the positive antithesis to burnout. Contemporary research has been strongly influenced by Schaufeli and Bakker's[15] definition of engagement as a "positive, fulfilling, work-related state of mind characterized by vigor, dedication and absorption". Vigour was associated with energy, resilience, persistence and greater effort. Dedication was characterized by involvement and associated with a personal sense of significance, pride, inspiration and challenge. The third sub-dimension (absorption) was linked to being happily engrossed at work so that time passed quickly.

The NSS questionnaire was based on the Utrecht Work Engagement Scale. The final survey questions were influenced by the NSS Improvement Board to reflect employee engagement in the context of the organization and its environment. These modifications were tested by cognitive interviewing for validity.[19] Overall-engagement scores were synthesized from three subdimension scales: motivation, advocacy and involvement. NSS motivation is similar to psychological engagement and includes elements of intrinsic motivation, dedication and absorption at work. Advocacy is strongly linked to care standards and reflects the perceptions that staff have of the organization's patient-centeredness and the level of pride they feel at work. It also reflects the willingness to recommend the organization as an employer or healthcare provider. Involvement is a "practitioner" measure which covers employee involvement in decision-making, change management and relationships with supervisors.[20]

Recent studies have suggested that employee engagement is better represented by a two-subdimension model. For example, Salanova et al.[21] reported that only two

of Schaufeli and Bakker's[15] dimensions predicted employee engagement, namely vigour and dedication. The 'absorption' subdimension was considered a consequence of employee engagement, not an antecedent. The debate about the antecedents of employee engagement prompted the research question:

In NHS survey instruments, overall engagement is calculated from three subdimension scales. Which subdimensions are the 'core dimensions' for NHS employee engagement? (Figure 1)

Methods

For consistency, this research focuses on NHS acute Trusts, whilst organizations in unusual circumstances (recent mergers, acquisitions or significant reconfigurations) and hybrid organizations (mixed community and acute services) are excluded. The resulting sample is 97 NHS acute Trusts in England. This study does not include NHS services in the rest of the UK, as they fall under different regulatory arrangements. Although this study uses Trust-level data, representativeness and comparability are assumed because a weighting procedure is applied to NSS returns based on a hypothetical national staff profile for each type of organization. To allow for historical comparisons, data weighting is regularly reviewed.[22]

Organization characteristics

All data is publicly available in the UK on NHS acute Trust websites, including NHS Trust Board papers and quality accounts. Organizational characteristics are selected as follows (to identify or reduce confounding effects). Acute Trusts in England have a wide range of operating incomes that directly affects available resources. Trusts with significant financial deficits can have constraints on resources so the size of Trust deficit as a percentage of financial turnover is used. Although bed numbers are an indicator of organizational size, it may also reflect an element of work intensity, and so could affect performance. Teaching hospitals affiliated to reputable academic organizations are associated with higher performance, so teaching status is included.[9-10] 'Foundation Trust' status is awarded to higher-performing NHS organizations and is intended to give them more autonomy and greater financial flexibility; and therefore is likely to impact on culture, climate and resources.

Engagement and performance (CQC ratings)

NHS acute Trust data is extracted from NSS reports. For each Trust, survey data corresponding to the year of their CQC inspection and the previous year is used. The mean average annual response rate for acute Trusts for 2012–2016 is: 49% (2012–13), 42% (2013–14), 41% (2014–15) and 43% (2015–16) respectively, comprising between 269,000 and 456,000 respondents per survey year.

Trust-level engagement scores are summarized for each organization using the weighting procedure described above. Organization scores are then compared to the national average for organizations of a similar type. Benchmark data is obtained from the summary reports provided to individual NHS Trusts.[22]

The CQC inspected all 136 acute Trusts and 17 specialist Trusts in England between September 2012–June 2016 and published the results on their website. This included a total of 265 non-specialist hospital sites or locations and 27 specialist hospitals operated by these Trusts. Assessment of core health services included: children and young people, intensive/critical care, maternity and gynaecology, end of life care, outpatients and diagnostic imaging, surgery, urgent and emergency services and medical care including older people. In making their assessments, the CQC uses a set of 150 indicators obtained from various sources (including inspection visits). They rate organizations under five domains (safe, effective, caring, responsive and well-led). Each organization receives an overall rating as: outstanding, good, needs improvement or inadequate.[17] (Supplementary Table 1)

NSS dimensions of employee engagement

As discussed, a three subdimension model of employee engagement is captured in the NSS. Each dimension is scored across a number of items, using a five-point scale or yes/no answers. ‘Overall engagement’ scores for each respondent is

created by taking the mean average from the three subdimension scores (motivation, advocacy and involvement). The subdimension scores have strong intercorrelations (Pearson's, $p<0.001$) and convergent validity. Factor loadings are all >0.7, Bartlett's test $p<0.001$, Kaiser Myer Olkin=0.71. The overall engagement Cronbach's alpha=0.70 and the standardized regression weight delta <0.2 for subdimension scales (using a single common factor approach). (Table 1)

Table 1: The NHS staff survey calculates overall engagement from three scales: motivation, advocacy and involvement.

Dimension	Description
Motivation	Staff motivation at work (Cronbach's alpha=0.81)
Advocacy	Recommend the organization as a place to work or receive treatment (Cronbach's alpha=0.74).
Involvement	Ability to contribute towards improvement at work (Cronbach's alpha=0.86).

Patient and Public Involvement

Patients and public were not involved in this study.

Ethics approval

Ethical approval was obtained from the Ethics Sub-Committee for Media and Communication and School of Management, University of Leicester.

Results

Employee engagement is treated as an organization-level variable. Scatter plots of standardized residuals show a roughly rectangular distribution with central clustering, so the assumption of linearity is met. There is no evidence of a systematic pattern of residuals and there are no residuals outside the accepted range for Trust-level data. Only two organizations have Mahalanobis distances greater than the critical value (e.g. χ^2=18.47 for 4 degrees of freedom) which is around the 2% recommended tolerance. Similarly, Cook's distances are <1, so the outliers do not have an undue influence on the predictability of the model. As a result, no acute Trusts with complete data sets are excluded.

Organizational factors and employee engagement

Employee engagement is compared to Trust size (financial turnover, bed numbers), type (Foundation/non-Foundation) and teaching status (teaching/non-teaching hospital). Univariate analysis of variance (Anova) shows that the model is statistically significant compared to chance ($p<0.05$). Regression analysis is used to quantify the % variance in employee engagement explained by the predictor variables (R^2=0.104, adjusted R^2=0.064, standard error=0.09). This suggests that the combined predictors explain 6-10% of the variance. The significant contributions are bed numbers (β=-0.46, $p<0.05$) and financial turnover (β=0.38, $p<0.05$).

Employee engagement and performance (CQC ratings)

The data is analyzed using hierarchical multiple regression: block 1 comprises control variables (financial deficit as % turnover, bed numbers, and Trust status) and block 2 Trust engagement scores (Supplementary Table 2).

In this way, the model assesses the contributions of predictor variables to the

variance in the dependent variable. The model is a statistically significant predictor of CQC ratings (Anova; F=11.42, p<0.001). The combined effect of the model's variables is 39% of CQC ratings variance. The control variables account for approximately 10% of CQC ratings. The change in R^2 (ΔR^2) in block 2 shows that engagement scores account for an additional 29% of variance (p<0.001, standard error=0.53). The statistically significant predictors are financial deficit (β=-0.19, p<0.05) and engagement score (β=0.57, p<0.001). The regression coefficients are shown in Table 2.

Table 2: **Hierarchical multiple regression – the conceptual model predicts CQC ratings. Engagement scores and Trust financial deficits are the significant predictors.**

	Unstandardized coefficients		Standardized coefficients	Change statistics			
	R	R^2	Adjusted R^2	Std.error	ΔR^2	ΔF	p value
Controls[a,b]	0.312	0.097	0.057	0.638	0.097	2.423	.054
Full model[a,c]	0.625	0.391	0.357	0.527	0.294	42.891	<0.001***

a. Dependent variable: CQC rating; *p<0.05, ** p<0.005, *** p<0.001

b. Predictors: (Constant), Deficit %, FT or non FT, Teaching status, Bed numbers

c. Predictors: (Constant), Deficit %, FT or non FT, Teaching status, Bed numbers, Engagement score

Employee engagement dimensions and perceived performance

Discriminate analysis is used to assess the ability of the employee engagement dimension scores to predict CQC ratings (Supplementary Table 3). The assumption of multivariate normality is met with Box's M, p>0.05. Univariate Anova suggests a statistically significant difference between the three engagement dimensions. Canonical discriminate functions show a statistically significant relationship between

the discriminating function (1) and the engagement subdimension scores. The (eigenvalues) canonical correlation=0.67, demonstrating good group separation by a discriminate function. That function explains 95.7% of the variance between the engagement dimensions (λ=0.54, p<0.001). Analysis shows that the factor driving discriminate function 1 is advocacy score, with the largest absolute correlation=0.96 (Table 3).

Table 3: **Discriminate analysis – the intercorrelations and correlations between engagement subdimensions and CQC ratings can be represented by a non-correlated discriminate function (Function 1).**

Function	Eigenvalue	% of variance	Cumulative %	Canonical correlation
1	0.801	95.7	95.7	0.667
2	0.036	4.3	100.0	0.185
3	0.000	0.0	100.0	0.020

Core dimensions of employee engagement in the NHS

Principal component analysis is used to test for a latent effect using data from the year of and the year before (Yb4) CQC inspections. Standard assumptions are met (sample >10 subjects per variable, strong intercorrelations r>0.3, Bartlett's test p<0.001, Kaiser Myer Olkin=0.76). The component matrix supports retaining a 1-factor solution since only 1 component had eigenvalue>1. The retained factor is advocacy score (eigenvalue=4.03), which explains approximately 67% of the total variance in the engagement data. By adding advocacy scores from the year before CQC inspections this increases to 80%. Combined advocacy and motivation scores from both years explain 95% of the total variance (Table 4).

Table 4: **Principal component analysis – advocacy scores from the year of and year before CQC inspections effectively predict employee engagement. Combined advocacy and motivation scores are a reliable indicator of overall engagement which can be efficiently represented by a two dimension model.**

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1.Advocacy	4.033	67.223	67.223	4.033	67.223	67.223
2.AdvocacyYb4[a]	0.748	12.462	79.684	-	-	-
3.Motivation	0.545	9.088	88.772	-	-	-
4.MotivationYb4[a]	0.398	6.629	95.401	-	-	-
5.Involvement	0.182	3.042	98.442	-	-	-
6.InvolvementYb4[a]	0.093	1.558	100.000	-	-	-

[a]Yb4 = year before CQC inspection

Discussion

Engagement is a popular but imprecise term with various definitions, models and measurement tools used in academic research. Conceptual models tend to consider engagement in terms of job demands, job resources and personal resources,[4-5,23]. In this context; the demands of a job or available resources extend beyond management styles, work intensity, materials or equipment to include employee autonomy, social support, optimism, coaching, feedback, personal development, self-efficacy and self-esteem. Adequate resources are an important motivational force at work because they reduce the perceived demands of a job, particularly when work intensity is consistently high.[5] Maumo et al.[6] reported that the loss of these resources can produce a downward spiral, particularly when employees sense a loss of autonomy or the inability to control aspects of their work.

Simpson's review emphasized how organizational factors affected the engagement of nurses (in addition to job attributes and leader behaviours).[7] Our findings emphasize that nuancing is required over the assumption that organizational structure has a strong effect on engagement. Our analysis shows that Trust size, type and status explain 6-10% of the variance in engagement scores which only partially supports our first hypothesis. Although the size of NHS acute Trusts is related to engagement scores, the two indicators of organizational size have opposite associations. Trusts with higher incomes (turnover) tended to have more engaged employees but organizations with more beds are associated with lower engagement. Parsimoniously, we speculate that the most influential organizational factors on engagement are related less to structure and more to employees' perceptions of the culture, leadership style and their working environment.[24]

There is growing interest in workplace factors that influence employee engagement due to the apparent effect that engagement has on organization-level performance and personal well-being. Reported benefits to businesses included: improved productivity, profitability and customer satisfaction.[4,16,25-26] Engagement research in healthcare settings tends to focus on health outcomes or quality metrics rather than business performance.

Whist comparisons between countries and industrial sectors is problematic, worldwide, the NHS is ranked fifth for number of employees and the NSS is considered to be the largest annual employee survey of its kind. West and Dawson (2012) reported that levels of employee engagement predicted hospital quality ratings (in addition to mortality, infection rates, patient satisfaction and absenteeism). These studies were based on survey data from 2008-2009 but despite a change in the regulatory regime and some outcome measures, our study suggests that the link between employee engagement and quality ratings in UK secondary healthcare has been maintained [20]. This finding supports our second hypothesis. The CQC highlights that financial pressures in provider organizations are associated with lower quality ratings, which is supported by the finding in our study: NHS acute Trusts with higher financial deficits as a proportion of their turnover tend to achieve lower CQC ratings. Although the CQC reported that good internal financial management is linked with better hospital ratings, this should be taken in the context of the prevailing external environment (particularly the pressure to control costs and prioritize effectiveness). CQC ratings do not decipher between organizations that are “better at balancing their budgets” and the root causes of the financial “deficits” in challenged Trusts.[17] There are widespread calls for investment in the NHS but it remains to be seen what level of investment is required before a ‘quality dividend’ is

apparent in secondary care providers in the UK.

Engagement is generally considered to be a multidimensional construct and, adopting this approach, the NSS uses a three subdimension model to assess overall engagement. Schaufeli et al.[15] described the subdimensions of engagement as vigour, dedication and absorption. This model has been widely adopted, indeed Simpson[7] recommended it be applied to all nurse-related research in order to provide a consistent approach. Although the models are not directly compatible, Schaufeli's vigour dimension links to NSS motivation and dedication is related to the NSS involvement or advocacy dimensions. Our study suggests that advocacy is the most influential dimension on CQC ratings. Better ratings tended to occur in organizations where employees thought the care of patients or service users was the organization's top priority and where they recommend their organization as a place to work or receive treatment. This is consistent with CQC[17] which reported that "staff in Trusts that have received higher ratings tend to recommend their organisation as a place to work and/or receive treatment. Furthermore, our analysis suggests that advocacy scores explain most of the variance in overall engagement scores. This implies that NHS employee engagement could be efficiently predicted by simply determining advocacy scores in future surveys. Alternatively, overall engagement could be reliability assessed by using a two subdimension model of engagement (advocacy plus motivation). This is consistent with Salanova et al.[21] and Maumo et al.[6] who reverted to a two-dimension model of engagement, concluding that vigour and dedication were the core dimensions of engagement in healthcare workers. Engaged employees choose to employ their energy whilst at work, they tend to be aware of their business context, identify with their role, are attentive and absorbed

when performing their job. The NSS advocacy scale contains a strong element of employee endorsement and has 2/3 questions that are specific to healthcare. In this context, it is consistent with self- assessment by employees of their psychological state at work. This study does not seek to replace existing theory but rather explores the functional relationships acting on and from engagement in a healthcare setting. In broad terms, engagement as a construct may reduce to its dimensions but these dimensions cannot reduce to overall engagement. By the same token, the dimensions of engagement do not entirely explain engagement but may be used to measure it. This type of non-representativeness is permissible because it is apparent, pragmatic and accommodative to the context.

Conclusion

This study provides evidence that the NSS measure of 'overall' employee engagement predicts regulator's ratings of NHS acute Trusts in England. Organizations with higher engagement scores tend to have better CQC ratings. This research also provides new evidence that the NSS engagement dimensions have different associations with these ratings. Specifically, it shows that the most influential predictor of CQC ratings is advocacy score (employees think the care of patients and service users is the organization's top priority, they would recommend their organization to others as a place to work and would be happy with the standard of care provided by the organization if a friend or relative needed treatment). Overall engagement in future NHS surveys could be reliability assessed by using a two subdimension model (advocacy and motivation) rather than current three subdimension model.

Implications

Theoretically, senior managers are best placed to modify the working environment, provide resources, moderate job demands and create the conditions that foster employee engagement. However, the pressure to control costs and prioritize effectiveness may limit the impact of lessons learned from engagement research. Many people currently working in or being cared for in NHS acute Trusts in England are aware of the changing environment and recognize the pressures caused by externally driven reforms, high work-intensity and rising job demands experienced by many healthcare professionals. Alarmingly, these are the very conditions which have been associated with higher levels of employee burnout.[14]

Healthcare organizations interested in improving engagement and quality ratings should pay close attention to the proportion of employees who would recommend their organization as a place to work or receive treatment, because this is a proxy for the level of employee engagement, and it predicts CQC ratings

Study limitations

The study uses a cross-sectional design which limits any conclusions about causation. Although the study period is 2012–2016, the data extraction was determined by the timing of CQC inspections, so a longitudinal design would better identify the factors which consistently influence employee engagement and organizational performance. Although there is a risk of reverse causality (CQC ratings predict engagement), the organization-level engagement scores were stable during the study period and most Trusts were only inspected once by the CQC.

The sample is limited to NHS acute Trusts in England, which limits the generalizability of the conclusions. The predictor variables are taken from a single self-reported source, therefore using different sources, more instruments or adding

objective measurements would reduce common method variance.[7] However the criterion variable was from a different source and time which mitigates this bias.[27] Self-reported observations can exaggerate relationships amongst variables and cannot exclude effects due to latent variables. This research uses aggregated engagement scores whereas most previous studies have used non-aggregated scores. Shuck and Wollard[28] claimed that looking at engagement at the level of an organization rather than the individual may be necessary but it "distorts the nature of the concept".

Directions of future research

Improving healthcare quality is a high priority in developed economies and so research designed to identify factors that predict quality performance should be encouraged. Engagement as a predictor of employee or organization performance is supported by several empirical studies.[15,25] Research that overcomes the methodological issues identified in our study may provide stronger empirical evidence of the economic and healthcare benefits of an engaged workforce. Research has tended to focus on individual engagement but there is a clear need for more group-level studies particularly in service industries where many people work in teams.[21] To facilitate this research, the instruments currently used to measure individual engagement need to be tested at different levels of an organization.

Whilst acknowledging the recommendation that a common definition of engagement be used in future research it would nevertheless be interesting to test if the strong influence of employee endorsement seen in our study, is more generalizable.[7]

Finally, future studies designed to identify the interventions that increase and maintain staff engagement will be of value to academia, business schools and HRM

professionals alike.

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References

1. NHS England. NHS staff survey. www.nhsstaffsurveys.com/Page/1056/Home/NHS-Staff-Survey-2016 (accessed 24 Jul 2018).

2. Saks AM. Antecedents and consequences of employee engagement, *J Manage Psychol* 2006;21:600-19.

3. Maslach C, Schaufeli WB, Leiter MP. Job burnout, *Annu Rev Psychol* 2001;52:397-422.

4. Bakker AB, Albrecht SL, Leiter MP. Key questions regarding work engagement. *Eur J Work Organ Psy*. 2011;20(1):4–28.

5. Hakanen JJ, Perhoniemi R, Toppinen-Tanner S. Positive gain spirals at work: from job resources to work engagement, personal initiative and work-unit innovativeness. *J Vocat Behav.* 2008;73(1):78–91.

6. Maumo S, Kinnunen U, Ruokolainen M. Job demands and resources as antecedents of work engagement: a longitudinal study. *J Vocat Behav.* 2007;70(1):149–71.

7. Simpson MR. Engagement at work: a review of the literature. *Int J Nurs Stud.* 2009;46(7):1012–24.

8. Prins JT, Hoekstra-Weebers JE, Gazendam-Donofrio SM, et al. Burnout and engagement among resident doctors in the Netherlands: a national study. *Medical Education* 2010;44(3):236–47.

9. Papanikolaou PN, Christidi GD, Ioannidis JP. Patient outcomes with teaching versus nonteaching healthcare: a systematic review. *PLoS Med.* 2006;3(9):e341.

10. Sjetne IS, Veenstra M, Stavem K. The effect of hospital size and teaching status on patient experiences with hospital care: a multilevel analysis. *Medical Care* 2007; 45(3):252–8.

11. Brand CA, Barker AL, Morello RT, et al. A review of hospital characteristics associated with improved performance. *Int J Qual Health Care* 2012;24(5):483–94.

12. West M, Dawson J, Admasachew L, et al. NHS staff management and health service quality. Department of Health, 2011.

13. Gruman JA, Saks AM. Performance management and employee engagement. *Hum Resour Manage R* 2011;21(2):123–36.

14. Laschinger HK, Leiter MP. The impact of nursing work environments on patient safety outcomes: the mediating role of burnout engagement. *J Nurs Adm.* 2006;36(5):259–675.

15. Schaufeli WB, Bakker AB. Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *J Organ Behav.* 2004;25(3):293–315.

16. Xanthopoulou D, Bakker AB, Demerouti E, et al. Reciprocal relationships between job resources, personal resources, and work engagement. *J Vocat Behav.* 2009;74(3):235–44.

17. CQC. State of Care 2016. www.cqc.org.uk/content/cqc-reveals-comprehensive-picture-quality-hospital-care-england (accessed 24 Jul 2018).

18.Kahn WA. Psychological conditions of personal engagement and disengagement at work, *Academy of management journal* 1990;33:692-724.

19. Admasachew L, Dawson J. Staff engagement in the NHS—a multilevel analysis, *Aston University* 2010.

20. West M, Dawson J. Employee engagement and NHS performance. *The King's Fund* 2012:1–23.

21. Salanova M, Lorente L, Chambel et al. Linking transformational leadership to nurses' extra-role performance: the mediating role of self-efficacy and work engagement. *J Adv Nurs.* 2011;67(10):2256–66.

22. Picker Institute. Making sense of your staff survey. www.nhsstaffsurveys.com/Page/1019/Past-Results/Staff-Survey-2016-Detailed-Spreadsheets/ (accessed 24 Jul 2018).

23. Nahrgang JD, Morgeson FP, Hofmann DA. Safety at work: a meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *J Appl Psychol.* 2011;71:1–24.

24. Fiabane E, Giorgi I, Sguazzin C, et al. Work engagement and occupational stress in nurses and other healthcare workers: the role of organisational and personal factors. *J Clin Nurs.* 2013;22:2614–24.

25. Harter JK, Schmidt FL, Hayes TL. Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: a meta-analysis. *J Appl Psychol.* 2002;87(2):268–79.

26. Lowe G. How employee engagement matters for hospital performance. *Healthcare Q* 2012;15(2):29–39.

27. Podsakoff PM, MacKenzie SB, Lee J, et al. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J Appl Psychol* 2003;88:879.

28. Shuck B, Wollard K. Employee engagement and HRD: a seminal review of the foundations. *Human Resour Dev Rev.* 2010;9(1):89–110.

Legends to figures and tables

Figure 1

Conceptual model – In annual employee surveys, NHS engagement scores are synthesized from three subdimension scores. The dimensions of engagement may have differential associations with CQC ratings (which are a controversial indicator of the perceived quality of NHS providers in England).

Table 1

The NHS staff survey calculates overall engagement from three scales: motivation, advocacy and involvement.

Table 2

Hierarchical multiple regression – the conceptual model predicts CQC ratings. Engagement scores and Trust financial deficits are the significant predictors.

Table 3

Discriminate analysis – the intercorrelations and correlations between engagement subdimensions and CQC ratings can be represented by a non-correlated discriminate function (Function 1).

Table 4

Principal component analysis – advocacy scores from the year of and year before CQC inspections effectively predict employee engagement. Combined advocacy and motivation scores are a reliable indicator of overall engagement which can be efficiently represented by a two-dimension model.

Legends to supplementary tables

Supplementary Table 1

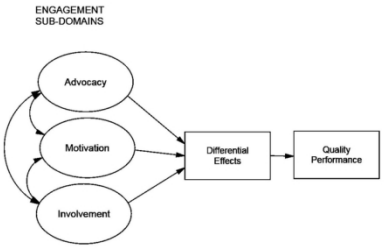
Schematic of CQC ratings matrix – Provider ratings are reported in five domains which are defined in the table

Supplementary Table 2

Descriptive statistics of study variables

Supplementary Table 3

Descriptive statistics for discriminate analysis – CQC rating categories and engagement subdomains are shown



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Rating	Domain	Definition
Outstanding Good Needs improvement Inadequate	Safe	protecting people from abuse and avoidable harm and is rated across 3 areas; culture, staffing and environment
	Effective	treatment and support achieves good outcomes, promotes a good quality of life and is based on the best available evidence
	Caring	staff involve and treat people with compassion, kindness, dignity and respect
	Responsive	services are organized so that they meet people's needs
	Well-led	leadership, management and governance of the organization assures the delivery of high-quality person-centered care, supports learning and innovation, and promotes an open and fair culture

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	Mean	Std Deviation	n
CQC Rating	1.28	.657	97
Beds	837.5	361.149	97
Teaching	.30	.462	96
FT	.64	.484	96
Deficit %	4.235	4.28497	96
Engagement Score	3.798	.09571	97

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CQC	Sub- domain	Mean	Std. Deviation	n
inadeq	Advocacy	3.5709	.14822	8
	Motivation	3.8915	.06785	8
	Involvement	.6636	.02418	8
reqim	Advocacy	3.6987	.14999	57
	Motivation	3.9188	.07190	57
	Involvement	.6933	.03892	57
good	Advocacy	3.8892	.10011	29
	Motivation	3.9504	.06329	29
	Involvement	.7124	.02287	29
outstnd	Advocacy	4.0748	.10995	3
	Motivation	3.9675	.02208	3
	Involvement	.7177	.02065	3
Total	Advocacy	3.7567	.17674	97
	Motivation	3.9275	.06994	97
	Involvement	.6973	.03568	97

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Relationship between employee engagement scores and service quality ratings: analysis of the National Health Service staff survey across 97 acute NHS Trusts in England and concurrent Care Quality Commission outcomes (2012–2016)

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TITLE

Relationship between employee engagement scores and service quality ratings: analysis of the National Health Service staff survey across 97 acute NHS Trusts in England and concurrent Care Quality Commission outcomes (2012–2016)

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Abstract

Objective This research explores measures of employee engagement in NHS acute Trusts in England and examines the association between organization-level engagement and the CQC's quality ratings.

Design Cross-sectional.

Setting 97 acute NHS Trusts in England.

Participants 97 NHS acute Trusts in England (2012–2016). Data includes provider details, staff survey results and CQC reports. Hybrid Trusts or organizations affected by recent mergers are excluded.

Outcome Measures Analysis uses organization-level employee engagement and CQC quality ratings.

Results Employee engagement is affected by organizational factors, including patient bed numbers (β=-0.46, $p<0.05$) and financial revenue (β=0.38, $p<0.05$). CQC ratings are predicted by overall employee engagement score (β=0.57, $p<0.001$) and financial deficit (β=-0.19, $p<0.05$). The most influential employee engagement dimension on provider ratings is 'advocacy' (λ=0.54, $p<0.001$). Analysis support the notion that employee engagement can be predicted from advocacy scores alone (eigenvalue=4.03). Better still, combining advocacy scores from the previous year's survey or adding in motivation scores is a highly reliable indication of overall employee engagement (95.4% of total variance).

Conclusions NHS acute Trusts with high employee engagement scores tend to have better CQC ratings. Trusts with a high financial deficit tend to have lower ratings. Employee engagement subdimensions have different associations with CQC ratings, the most influential dimension being advocacy score. A two subdimension

model of engagement efficiently predicts overall employee engagement in NHS acute Trusts in England. Healthcare leaders should pay close attention to the proportion of employees who would recommend their organization as a place to work or receive treatment, because this is a proxy for the level of engagement, and it predicts CQC ratings.

Article Summary

Strengths and limitations of this study

- Engagement data is taken from a large national survey of NHS employees.
- The survey results coincide with the first national inspection programme of all acute NHS Trusts in England, by the Care Quality Commission (CQC).
- A conceptual model is used to analyze the association between the subdimensions of employee engagement and perceived quality (as measured by the CQC).
- The predictor variables are taken from a single self-reported source which risks common method variance.
- The sample and cross-sectional design limit conclusions about causation or generalizability.

Introduction

This study considers organization-level measures of work engagement taken from the annual National Health Service (NHS) staff surveys (NSS) 2012–2016.[1] It examines the effect that organizational size, status and financial revenue have on overall engagement and compares engagement scores to provider ratings for NHS acute Trusts in England. Employee engagement research typically uses a multidimensional construct of engagement, so the study applies this approach to the NHS. It investigates the associations between NSS engagement subdimensions and the perceived quality of provider organizations (as reported by the Care Quality Commission).

Organizational factors

Saks[2] suggests that employees repay their organization for the resources they receive through their levels of engagement and to some extent engagement reflects the relationship employees have with their organizations. Maslach et al.[3] emphasized the important role that organizations play in providing these valued resources by allowing employees some autonomy or by providing feedback and learning opportunities. The engagement-promoting capacity of job resources was also identified by Bakker et al.[4] who described job resources as the physical, social or organizational factors which reduce job demands and play a motivational role at work. Job resources reduced the perceived demands of a job and appeared to protect employees from burnout, particularly during sustained periods of high work intensity. From a healthcare perspective, Hakanen et al.[5] in a longitudinal study of over 2500 Finnish dentists reported a positive, step-wise relationship between job resources, engagement and personal initiative or innovativeness. In another Finnish study of 409 healthcare

workers, Maumo et al.[6] concluded that the best predictors of engagement were self-esteem and the ability of employees to control some aspects of their work (job resources were more influential than job demands). Relatedly, job resources have been linked to engagement amongst nurses and doctors working in hospital environments.[7-8]

In the UK, recruitment and retention of staff has historically been more successful in large, prestigious teaching hospitals with considerable resources at their disposal. Several studies have linked the structure of healthcare organizations to measures of performance including efficiency, patient outcomes, staff and patient satisfaction.[9-10] There has been a reporting bias towards “bigger is better” but the evidence for such a general assertion is weak.[11] West et al[12] found that the type of NHS organization influenced employee engagement but the key organizational characteristics which predict employee engagement in an acute healthcare environment are uncertain. Parsimoniously, this research examines the results of recent NHS staff surveys for evidence that employee engagement is linked to organizational characteristics which may be a proxy for available resourses, using the following hypothesis H1(a) and H1(b):

H1 (a) NHS employee engagement will be related to Trust size (bed numbers or revenue).

H1 (b) NHS employee engagement will be related to Trust type or status (Foundation/non-Foundation, teaching/non-teaching hospital

Higher levels of employee engagement will be associated with large teaching hospitals, Foundation Trusts or organizations in strong financial positions.

Employee engagement and performance (CQC ratings)

The proposition that employee engagement has a positive effect on organizational performance is not new.[13] Employee engagement has been associated with improved performance in many industries, albeit there is limited healthcare evidence. Engaged employees tend to be intrinsically motivated, are more likely to achieve their goals and learn from mistakes and engagement has been associated with organization-level quality outcomes.[14-16] Engagement amongst healthcare professionals is considered high compared to other industries and hospitals with more engaged nurses tended to deliver better patient care and have superior safety records compared to those with less engaged employees.[14] Although there are few studies from the NHS, the historical link between NHS engagement and quality was reported in West et al (2011). Staff engagement had a significant effect on patient satisfaction, hospital mortality rates, infection rates, absenteeism, staff turnover and Annual Health Check ratings (a forerunner of QCC ratings).

One controversial measure of NHS provider quality is the use of CQC healthcare ratings by the Department of Health and Social Care. In 2016, the CQC completed the first national inspection programme of NHS acute Trusts in England and rated each organization as: outstanding, good, requires improvement or inadequate. The CQC highlighted the variation in quality and attributed this to factors such as culture, leadership and staff engagement.[17] It follows, that employee engagement is worth investigating as a predictor of CQC ratings. Based on the literature, the direct relationship between engagement and perceived quality of NHS acute Trusts is expressed as our second hypothesis (H2):

H 2: There is a positive relationship between the levels of staff engagement and Trust performance so overall employee engagement in acute NHS Trusts will predict their CQC ratings.

Engagement subdimensions

Although Kahn[18] was the first to define work engagement as a multi-dimensional construct related to meaningfulness, safety and availability, subsequent developmental theories conceptualized engagement as the positive antithesis to burnout. Contemporary research has been strongly influenced by Schaufeli and Bakker's[15] definition of engagement as a "positive, fulfilling, work-related state of mind characterized by vigor, dedication and absorption". Vigour was associated with energy, resilience, persistence and greater effort. Dedication was characterized by involvement and associated with a personal sense of significance, pride, inspiration and challenge. The third sub-dimension (absorption) was linked to being happily engrossed at work so that time passed quickly.

The NSS questionnaire was based on the Utrecht Work Engagement Scale (UWES) which operationalizes Schaufeli and Bakker's definition of engagement above.[15] The final survey questions were influenced by the NSS Improvement Board to reflect employee engagement in the context of the organization and its environment. These modifications were tested by cognitive interviewing for validity.[19] Overall-engagement scores were synthesized from three subdimension scales: motivation, advocacy and involvement. NSS motivation is similar to psychological engagement and includes elements of intrinsic motivation, dedication and absorption at work. Advocacy is strongly linked to care standards and reflects the perceptions that staff have of the organization's patient-centeredness and the level of pride they feel at work. It also reflects the willingness to recommend the

organization as an employer or healthcare provider. Involvement is a “practitioner” measure which covers employee involvement in decision-making, change management and relationships with supervisors.[20]

Recent studies have suggested that employee engagement is better represented by a two-subdimension model. For example, Salanova et al.[21] reported that only two of Schaufeli and Bakker’s[15] dimensions predicted employee engagement, namely vigour and dedication. The ‘absorption’ subdimension was considered a consequence of employee engagement, not an antecedent. The debate about the antecedents of employee engagement prompted the research question:

In NHS survey instruments, overall engagement is calculated from three subdimension scales. Which subdimensions are the ‘core dimensions’ for NHS employee engagement? (Figure 1)

Methods

For consistency, this research focuses on NHS acute Trusts, whilst organizations in unusual circumstances (recent mergers, acquisitions or significant reconfigurations) and hybrid organizations (mixed community and acute services) are excluded. The resulting sample is 97 NHS acute Trusts in England. This study does not include NHS services in the rest of the UK, as they fall under different regulatory arrangements. Although this study uses Trust-level data, representativeness and comparability are assumed because a weighting procedure is applied to NSS returns based on a hypothetical national staff profile for each type of organization. To allow for historical comparisons, data weighting is regularly reviewed.[22]

Organization characteristics

All data is publicly available in the UK on NHS acute Trust websites, including NHS Trust Board papers and quality accounts. Organizational characteristics are selected as follows (to identify or reduce confounding effects). Acute Trusts in England have a wide range of operating incomes that directly affects available resources. Trusts with significant financial deficits can have constraints on resources so the size of Trust deficit as a percentage of financial turnover is used. Although bed numbers are an indicator of organizational size, it may also reflect an element of work intensity, and so could affect performance. Teaching hospitals affiliated to reputable academic organizations are associated with higher performance, so teaching status is included.[9-10] 'Foundation Trust' status is awarded to higher-performing NHS organizations and is intended to give them more autonomy and greater financial flexibility; and therefore is likely to impact on culture, climate and resources.

Engagement and performance (CQC ratings)

NHS acute Trust data is extracted from NSS reports. For each Trust, survey data corresponding to the year of their CQC inspection and the previous year is used. The mean average annual response rate for acute Trusts for 2012–2016 is: 49% (2012–13), 42% (2013–14), 41% (2014–15) and 43% (2015–16) respectively, comprising between 269,000 and 456,000 respondents per survey year.

Trust-level engagement scores are summarized for each organization using the weighting procedure described above. Organization scores are then compared to the national average for organizations of a similar type. Benchmark data is obtained from the summary reports provided to individual NHS Trusts.[22]

The CQC inspected all 136 acute Trusts and 17 specialist Trusts in England between September 2012–June 2016 and published the results on their website. This included a total of 265 non-specialist hospital sites or locations and 27 specialist hospitals operated by these Trusts. Assessment of core health services included: children and young people, intensive/critical care, maternity and gynaecology, end of life care, outpatients and diagnostic imaging, surgery, urgent and emergency services and medical care including older people. In making their assessments, the CQC uses a set of 150 indicators obtained from various sources (including inspection visits). They rate organizations under five domains (safe, effective, caring, responsive and well-led). Each organization receives an overall rating as: outstanding, good, needs improvement or inadequate.[17] (Supplementary Table 1)

NSS dimensions of employee engagement

As discussed, a three subdimension model of employee engagement is captured in the NSS. Each dimension is scored across a number of items, using a five-point scale or yes/no answers. ‘Overall engagement’ scores for each respondent is

created by taking the mean average from the three subdimension scores (motivation, advocacy and involvement). The subdimension scores have strong intercorrelations (Pearson's, $p<0.001$) and convergent validity. Factor loadings are all >0.7, Bartlett's test $p<0.001$, Kaiser Myer Olkin=0.71. Overall engagement score for each organization is calculated using a weighted mean average (to account for occupational differences between Trusts). Overall engagement Cronbach's alpha=0.70 and the standardized regression weight delta <0.2 for subdimension scales (using a single common factor approach). (Table 1)

Table 1: The NHS staff survey calculates overall engagement from three scales: motivation, advocacy and involvement.

Dimension	Description
Motivation	Staff motivation at work (Cronbach's alpha=0.81)
Advocacy	Recommend the organization as a place to work or receive treatment (Cronbach's alpha=0.74).
Involvement	Ability to contribute towards improvement at work (Cronbach's alpha=0.86).

Patient and Public Involvement

Patients and public were not involved in this study.

Ethics approval

Ethical approval was obtained from the Ethics Sub-Committee for Media and Communication and School of Management, University of Leicester.

Results

Employee engagement is treated as an organization-level variable. Scatter plots of standardized residuals show a roughly rectangular distribution with central clustering, so the assumption of linearity is met. There is no evidence of a systematic pattern of residuals and there are no residuals outside the accepted range for Trust-level data. Only two organizations have Mahalanobis distances greater than the critical value (e.g. χ^2=18.47 for 4 degrees of freedom) which is around the 2% recommended tolerance. Similarly, Cook's distances are <1, so the outliers do not have an undue influence on the predictability of the model. As a result, no acute Trusts with complete data sets are excluded.

Organizational factors and employee engagement

Employee engagement is compared to Trust size (financial turnover, bed numbers), type (Foundation/non-Foundation) and teaching status (teaching/non-teaching hospital). Univariate analysis of variance (Anova) shows that the model is statistically significant compared to chance ($p<0.05$). Regression analysis is used to quantify the % variance in employee engagement explained by the predictor variables (R^2=0.104, adjusted R^2=0.064, standard error=0.09). This suggests that the combined predictors explain 6-10% of the variance. The significant contributions are bed numbers (β=-0.46, $p<0.05$) and financial turnover (β=0.38, $p<0.05$).

Employee engagement and performance (CQC ratings)

The data is analyzed using hierarchical multiple regression: block 1 comprises control variables (financial deficit as % turnover, bed numbers, and Trust status) and block 2 Trust engagement scores (Supplementary Table 2).

In this way, the model assesses the contributions of predictor variables to the

variance in the dependent variable. The model is a statistically significant predictor of CQC ratings (Anova; F=11.42, p<0.001). The combined effect of the model's variables is 39% of CQC ratings variance. The control variables account for approximately 10% of CQC ratings. The change in R^2 (ΔR^2) in block 2 shows that engagement scores account for an additional 29% of variance (p<0.001, standard error=0.53). The statistically significant predictors are financial deficit (β=-0.19, p<0.05) and engagement score (β=0.57, p<0.001). The regression coefficients are shown in Table 2.

Table 2: **Hierarchical multiple regression – the conceptual model predicts CQC ratings. Engagement scores and Trust financial deficits are the significant predictors.**

	Unstandardized coefficients		Standardized coefficients	Change statistics			
	R	R^2	Adjusted R^2	Std.error	ΔR^2	ΔF	p value
Controls[a,b]	0.312	0.097	0.057	0.638	0.097	2.423	.054
Full model[a,c]	0.625	0.391	0.357	0.527	0.294	42.891	<0.001***

a. Dependent variable: CQC rating; *p<0.05, ** p<0.005, *** p<0.001

b. Predictors: (Constant), Deficit %, FT or non FT, Teaching status, Bed numbers

c. Predictors: (Constant), Deficit %, FT or non FT, Teaching status, Bed numbers, Engagement score

Employee engagement dimensions and perceived performance

Discriminate analysis is used to assess the ability of the employee engagement dimension scores to predict CQC ratings (Supplementary Table 3). The assumption of multivariate normality is met with Box's M, p>0.05. Univariate Anova suggests a statistically significant difference between the three engagement dimensions. Canonical discriminate functions show a statistically significant relationship between

the discriminating function (1) and the engagement subdimension scores. The (eigenvalues) canonical correlation=0.67, demonstrating good group separation by a discriminate function. That function explains 95.7% of the variance between the engagement dimensions (λ=0.54, p<0.001). Analysis shows that the factor driving discriminate function 1 is advocacy score, with the largest absolute correlation=0.96 (Table 3).

Table 3: **Discriminate analysis – the intercorrelations and correlations between engagement subdimensions and CQC ratings can be represented by a non-correlated discriminate function (Function 1).**

Function	Eigenvalue	% of variance	Cumulative %	Canonical correlation
1	0.801	95.7	95.7	0.667
2	0.036	4.3	100.0	0.185
3	0.000	0.0	100.0	0.020

Core dimensions of employee engagement in the NHS

Principal component analysis is used to test for a latent effect using data from the year of and the year before (Yb4) CQC inspections. Standard assumptions are met (sample >10 subjects per variable, strong intercorrelations r>0.3, Bartlett's test p<0.001, Kaiser Myer Olkin=0.76). The component matrix supports retaining a 1-factor solution since only 1 component had eigenvalue>1. The retained factor is advocacy score (eigenvalue=4.03), which explains approximately 67% of the total variance in the engagement data. By adding advocacy scores from the year before CQC inspections this increases to 80%. Combined advocacy and motivation scores from both years explain 95% of the total variance (Table 4).

Table 4: **Principal component analysis – advocacy scores from the year of and year before CQC inspections effectively predict employee engagement. Combined advocacy and motivation scores are a reliable indicator of overall engagement which can be efficiently represented by a two dimension model.**

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1.Advocacy	4.033	67.223	67.223	4.033	67.223	67.223
2.AdvocacyYb4[a]	0.748	12.462	79.684	-	-	-
3.Motivation	0.545	9.088	88.772	-	-	-
4.MotivationYb4[a]	0.398	6.629	95.401	-	-	-
5.Involvement	0.182	3.042	98.442	-	-	-
6.InvolvementYb4[a]	0.093	1.558	100.000	-	-	-

[a]Yb4 = year before CQC inspection

Discussion

Engagement is a popular but imprecise term with various definitions, models and measurement tools used in academic research. Conceptual models tend to consider engagement in terms of job demands, job resources and personal resources,[4-5,23]. In this context; the demands of a job or available resources extend beyond management styles, work intensity, materials or equipment to include employee autonomy, social support, optimism, coaching, feedback, personal development, self-efficacy and self-esteem. Adequate resources are an important motivational force at work because they reduce the perceived demands of a job, particularly when work intensity is consistently high.[5] Maumo et al.[6] reported that the loss of these resources can produce a downward spiral, particularly when employees sense a loss of autonomy or the inability to control aspects of their work.

Simpson's review emphasized how organizational factors affected the engagement of nurses (in addition to job attributes and leader behaviours).[7] Our findings emphasize that nuancing is required over the assumption that organizational structure has a strong effect on engagement. Our analysis shows that Trust size, type and status explain 6-10% of the variance in engagement scores which partially supports our first hypothesis, H1(a). Although the size of NHS acute Trusts is related to engagement scores, the two indicators of organizational size have opposite associations. Trusts with higher incomes (turnover) tended to have more engaged employees but organizations with more beds are associated with lower engagement. Although prestigious UK teaching hospitals or Foundation Trusts (with considerable resources at their disposal) have historically found recruitment and retention of employees less challenging than small providers, in our study organization status is not a significant predictor of employee engagement. This does not support H1(b). It

is possible that personal resources (positive self-evaluations) have a strong influence on perceived job resources/organization status when determining overall engagement. We speculate that the most influential organizational factors on engagement are related less to structure and more to employees' perceptions of the culture, leadership style and their working environment.[24]

There is growing interest in workplace factors that influence employee engagement due to the apparent effect that engagement has on organization-level performance and personal well-being. Reported benefits to businesses included: improved productivity, profitability and customer satisfaction.[4,16,25-26] Engagement research in healthcare settings tends to focus on health outcomes or quality metrics rather than business performance.

Whist comparisons between countries and industrial sectors is problematic, worldwide, the NHS is ranked fifth for number of employees and the NSS is considered to be the largest annual employee survey of its kind. West and Dawson (2012) reported that levels of employee engagement predicted hospital quality ratings (in addition to mortality, infection rates, patient satisfaction and absenteeism). These studies were based on survey data from 2008-2009 but despite a change in the regulatory regime and some outcome measures, our study suggests that the link between employee engagement and quality ratings in UK secondary healthcare has been maintained [20]. This finding supports our second hypothesis. The CQC highlights that financial pressures in provider organizations are associated with lower quality ratings, which is supported by the finding in our study: NHS acute Trusts with higher financial deficits as a proportion of their turnover tend to achieve lower CQC ratings. Although the CQC reported that good internal financial management is linked with better hospital ratings, this should be taken in the context of the prevailing

external environment (particularly the pressure to control costs and prioritize effectiveness). CQC ratings do not decipher between organizations that are “better at balancing their budgets” and the root causes of the financial “deficits” in challenged Trusts.[17] There are widespread calls for investment in the NHS but it remains to be seen what level of investment is required before a ‘quality dividend’ is apparent in secondary care providers in the UK.

Engagement is generally considered to be a multidimensional construct and, adopting this approach, the NSS uses a three subdimension model to assess overall engagement. Schaufeli et al.[15] described the subdimensions of engagement as vigour, dedication and absorption. This model has been widely adopted, indeed Simpson[7] recommended it be applied to all nurse-related research in order to provide a consistent approach. Although the models are not directly compatible, Schaufeli’s vigour dimension links to NSS motivation and dedication is related to the NSS involvement or advocacy dimensions. Our study suggests that advocacy is the most influential dimension on CQC ratings. Better ratings tended to occur in organizations where employees thought the care of patients or service users was the organization’s top priority and where they recommend their organization as a place to work or receive treatment. This is consistent with CQC[17] which reported that “staff in Trusts that have received higher ratings tend to recommend their organisation as a place to work and/or receive treatment. Furthermore, our analysis suggests that advocacy scores explain most of the variance in overall engagement scores. This implies that NHS employee engagement could be efficiently predicted by simply determining advocacy scores in future surveys. Alternatively, overall engagement could be reliability assessed by using a two subdimension model of engagement (advocacy

plus motivation). This is consistent with Salanova et al.[21] and Maumo et al.[6] who reverted to a two-dimension model of engagement, concluding that vigour and dedication were the core dimensions of engagement in healthcare workers. Engaged employees choose to employ their energy whilst at work, they tend to be aware of their business context, identify with their role, are attentive and absorbed when performing their job.

The NSS advocacy scale contains a strong element of employee endorsement and has 2/3 questions that are specific to healthcare. In this context, it is consistent with self-assessment by employees of their psychological state at work but diverges from other measurement tools (in that the emphasis is organizational engagement). Athough this approach has utility, it could reflect a general attitude of employees towards the employer rather than the traditional view of work engagement used in most empirical research.[27,28] This study does not seek to replace existing theory but rather explores the functional relationships acting on and from engagement in a healthcare setting. In broad terms, engagement as a construct may reduce to its dimensions but these dimensions cannot reduce to overall engagement. By the same token, the dimensions of engagement do not entirely explain engagement but may be used to measure it. This type of non-representativeness is permissible because it is apparent, pragmatic and accommodative to the context.

Conclusion

This study provides evidence that the NSS measure of 'overall' employee engagement predicts regulator's ratings of NHS acute Trusts in England. Organizations with higher engagement scores tend to have better CQC ratings. This research also provides new evidence that the NSS engagement dimensions have different associations with these ratings. Specifically, it shows that the most

influential predictor of CQC ratings is advocacy score (employees think the care of patients and service users is the organization's top priority, they would recommend their organization to others as a place to work and would be happy with the standard of care provided by the organization if a friend or relative needed treatment). Overall engagement in future NHS surveys could be reliability assessed by using a two subdimension model (advocacy and motivation) rather than current three subdimension model.

Implications

Theoretically, senior managers are best placed to modify the working environment, provide resources, moderate job demands and create the conditions that foster employee engagement. However, the pressure to control costs and prioritize effectiveness may limit the impact of lessons learned from engagement research. Many people currently working in or being cared for in NHS acute Trusts in England are aware of the changing environment and recognize the pressures caused by externally driven reforms, high work-intensity and rising job demands experienced by many healthcare professionals. Alarmingly, these are the very conditions which have been associated with higher levels of employee burnout.[14]

Healthcare organizations interested in improving engagement and quality ratings should pay close attention to the proportion of employees who would recommend their organization as a place to work or receive treatment, because this is a proxy for the level of employee engagement, and it predicts CQC ratings

Study limitations

The study uses a cross-sectional design which limits any conclusions about causation. Although the study period is 2012–2016, the data extraction was

determined by the timing of CQC inspections, so a longitudinal design would better identify the factors which consistently influence employee engagement and organizational performance. It is difficult to directly compare this study with research based on the UWES because the NHS measure of engagement is a synthesis of psychological engagement (used in most academic research) and organizational engagement (used in most practitioner research). Although the risk of reverse causality is acknowledged (CQC ratings predict engagement), during the study period the annual organization-level engagement scores were stable whilst most Trusts were only rated once by the CQC.

The sample is limited to NHS acute Trusts in England, which limits the generalizability of the conclusions. The predictor variables are taken from a single self-reported source, therefore using different sources, more instruments or adding objective measurements would reduce common method variance.[7] However the criterion variable was from a different source and time which mitigates this bias.[29] Self-reported observations can exaggerate relationships amongst variables and cannot exclude effects due to latent variables. This research uses aggregated engagement scores whereas most previous studies have used non-aggregated scores. Shuck and Wollard[30] claimed that looking at engagement at the level of an organization rather than the individual may be necessary but it “distorts the nature of the concept”.

Directions of future research

Improving healthcare quality is a high priority in developed economies and so research designed to identify factors that predict quality performance should be encouraged. Engagement as a predictor of employee or organization performance is supported by several empirical studies.[15,25] Research that overcomes the

methodological issues identified in our study may provide stronger empirical evidence of the economic and healthcare benefits of an engaged workforce. Research has tended to focus on individual engagement but there is a clear need for more group-level studies particularly in service industries where many people work in teams.[21] To facilitate this research, the instruments currently used to measure individual engagement need to be tested at different levels of an organization.

Whilst acknowledging the recommendation that a common definition of engagement be used in future research it would nevertheless be interesting to test if the strong influence of employee endorsement seen in our study, is more generalizable.[7]

Finally, future studies designed to identify the interventions that increase and maintain staff engagement will be of value to academia, business schools and HRM professionals alike.

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Footnotes

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References

1. NHS England. NHS staff survey. www.nhsstaffsurveys.com/Page/1056/Home/NHS-Staff-Survey-2016 (accessed 24 Jul 2018).

2. Saks AM. Antecedents and consequences of employee engagement, *J Manage Psychol* 2006;21:600-19.

3. Maslach C, Schaufeli WB, Leiter MP. Job burnout, *Annu Rev Psychol* 2001;52:397-422.

4. Bakker AB, Albrecht SL, Leiter MP. Key questions regarding work engagement. *Eur J Work Organ Psy*. 2011;20(1):4–28.

5. Hakanen JJ, Perhoniemi R, Toppinen-Tanner S. Positive gain spirals at work: from job resources to work engagement, personal initiative and work-unit innovativeness. *J Vocat Behav.* 2008;73(1):78–91.

6. Maumo S, Kinnunen U, Ruokolainen M. Job demands and resources as antecedents of work engagement: a longitudinal study. *J Vocat Behav.* 2007;70(1):149–71.

7. Simpson MR. Engagement at work: a review of the literature. *Int J Nurs Stud.* 2009;46(7):1012–24.

8. Prins JT, Hoekstra-Weebers JE, Gazendam-Donofrio SM, et al. Burnout and engagement among resident doctors in the Netherlands: a national study. *Medical Education* 2010;44(3):236–47.

9. Papanikolaou PN, Christidi GD, Ioannidis JP. Patient outcomes with teaching versus nonteaching healthcare: a systematic review. *PLoS Med.* 2006;3(9):e341.

10. Sjetne IS, Veenstra M, Stavem K. The effect of hospital size and teaching status on patient experiences with hospital care: a multilevel analysis. *Medical Care* 2007; 45(3):252–8.

11. Brand CA, Barker AL, Morello RT, et al. A review of hospital characteristics associated with improved performance. *Int J Qual Health Care* 2012;24(5):483–94.

12. West M, Dawson J, Admasachew L, et al. NHS staff management and health service quality. Department of Health, 2011.

13. Gruman JA, Saks AM. Performance management and employee engagement. *Hum Resour Manage R* 2011;21(2):123–36.

14. Laschinger HK, Leiter MP. The impact of nursing work environments on patient safety outcomes: the mediating role of burnout engagement. *J Nurs Adm.* 2006;36(5):259–675.

15. Schaufeli WB, Bakker AB. Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *J Organ Behav.* 2004;25(3):293–315.

16. Xanthopoulou D, Bakker AB, Demerouti E, et al. Reciprocal relationships between job resources, personal resources, and work engagement. *J Vocat Behav.* 2009;74(3):235–44.

17. CQC. State of Care 2016. www.cqc.org.uk/content/cqc-reveals-comprehensive-picture-quality-hospital-care-england (accessed 24 Jul 2018).

18.Kahn WA. Psychological conditions of personal engagement and disengagement at work, *Academy of management journal* 1990;33:692-724.

19. Admasachew L, Dawson J. Staff engagement in the NHS—a multilevel analysis, *Aston University* 2010.

20. West M, Dawson J. Employee engagement and NHS performance. *The King's Fund* 2012:1–23.

21. Salanova M, Lorente L, Chambel et al. Linking transformational leadership to nurses' extra-role performance: the mediating role of self-efficacy and work engagement. *J Adv Nurs.* 2011;67(10):2256–66.

22. Picker Institute. Making sense of your staff survey. www.nhsstaffsurveys.com/Page/1019/Past-Results/Staff-Survey-2016-Detailed-Spreadsheets/ (accessed 24 Jul 2018).

23. Nahrgang JD, Morgeson FP, Hofmann DA. Safety at work: a meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *J Appl Psychol.* 2011;71:1–24.

24. Fiabane E, Giorgi I, Sguazzin C, et al. Work engagement and occupational stress in nurses and other healthcare workers: the role of organisational and personal factors. *J Clin Nurs.* 2013;22:2614–24.

25. Harter JK, Schmidt FL, Hayes TL. Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: a meta-analysis. *J Appl Psychol.* 2002;87(2):268–79.

26. Lowe G. How employee engagement matters for hospital performance. *Healthcare Q* 2012;15(2):29–39.

27. Swanberg JE, McKechnie SP, Ojha MU, et al. Schedule control, supervisor support and work engagement: A winning combination for workers in hourly jobs? *J Vocat Behav*. 2011;79(3):613-24.

28. Fletcher L, Robinson D, Truss C, et al. Measuring engagement and interpreting survey results. *IES* 2014:1-25.

29. Podsakoff PM, MacKenzie SB, Lee J, et al. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J Appl Psychol* 2003;88:879.

30. Shuck B, Wollard K. Employee engagement and HRD: a seminal review of the foundations. *Human Resour Dev Rev.* 2010;9(1):89–110.

Legends to figures and tables

Figure 1

Conceptual model – In annual employee surveys, NHS engagement scores are synthesized from three subdimension scores. The dimensions of engagement may have differential associations with CQC ratings (which are a controversial indicator of the perceived quality of NHS providers in England).

Table 1

The NHS staff survey calculates overall engagement from three scales: motivation, advocacy and involvement.

Table 2

Hierarchical multiple regression – the conceptual model predicts CQC ratings. Engagement scores and Trust financial deficits are the significant predictors.

Table 3

Discriminate analysis – the intercorrelations and correlations between engagement subdimensions and CQC ratings can be represented by a non-correlated discriminate function (Function 1).

Table 4

Principal component analysis – advocacy scores from the year of and year before CQC inspections effectively predict employee engagement. Combined advocacy and motivation scores are a reliable indicator of overall engagement which can be efficiently represented by a two-dimension model.

Legends to supplementary tables

Supplementary Table 1

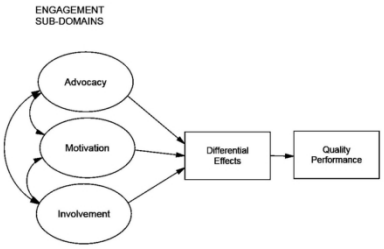
Schematic of CQC ratings matrix – Provider ratings are reported in five domains which are defined in the table

Supplementary Table 2

Descriptive statistics of study variables

Supplementary Table 3

Descriptive statistics for discriminate analysis – CQC rating categories and engagement subdomains are shown



76x42mm (600 x 600 DPI)

Rating	Domain	Definition
Outstanding Good Needs improvement Inadequate	Safe	protecting people from abuse and avoidable harm and is rated across 3 areas; culture, staffing and environment
	Effective	treatment and support achieves good outcomes, promotes a good quality of life and is based on the best available evidence
	Caring	staff involve and treat people with compassion, kindness, dignity and respect
	Responsive	services are organized so that they meet people's needs
	Well-led	leadership, management and governance of the organization assures the delivery of high-quality person-centered care, supports learning and innovation, and promotes an open and fair culture

	Mean	Std Deviation	n
CQC Rating	1.28	.657	97
Beds	837.5	361.149	97
Teaching	.30	.462	96
FT	.64	.484	96
Deficit %	4.235	4.28497	96
Engagement Score	3.798	.09571	97

CQC	Sub- domain	Mean	Std. Deviation	n
inadeq	Advocacy	3.5709	.14822	8
	Motivation	3.8915	.06785	8
	Involvement	.6636	.02418	8
reqim	Advocacy	3.6987	.14999	57
	Motivation	3.9188	.07190	57
	Involvement	.6933	.03892	57
good	Advocacy	3.8892	.10011	29
	Motivation	3.9504	.06329	29
	Involvement	.7124	.02287	29
outstnd	Advocacy	4.0748	.10995	3
	Motivation	3.9675	.02208	3
	Involvement	.7177	.02065	3
Total	Advocacy	3.7567	.17674	97
	Motivation	3.9275	.06994	97
	Involvement	.6973	.03568	97