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Improving employee engagement and distributed leadership through lean systems process mapping in the NHS.

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Abstract
Background / Aims: Evidence of the effectiveness and impact of Lean Systems Thinking in healthcare settings remains mixed. This study explores the impact of participation in a process mapping activity on employee engagement and distributed leadership in the NHS.
Methods: A qualitative study was undertaken using semi-structured interviews with 9 employees within an NHS Trust in the North-East of England. Questions sought to explore the experiences of those involved in the process mapping activity. A thematic analysis was carried out and results presented.
Findings: Following the implementation of process mapping, staff appeared more engaged and there was a closer relationship between teams and management. Factors found to affect participation were: if participation was mandatory, history of the team, team dynamics, inter-personal concerns. Participation broke down barriers with management, helped participants to feel listened to and increased staff confidence in their role. The end result was: increased employee engagement, greater team working and distributed leadership, increased job satisfaction and reduced stress levels.
Conclusions: The research provides a significant contribution to our understanding of how process mapping activities can be used in the NHS.

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Conclusions: The research provides a significant contribution to our understanding of how process mapping activities can be used in the NHS.

Background

In 2010 the NHS Institute for Innovation and Improvement released a toolkit, describing how process mapping could successfully be used as a quality improvement tool. This had the effect of encouraging the use of lean methodology in UK healthcare. Following this it has been argued that 'the flexibility of lean is demonstrated with the endless opportunities in which staff and leadership can make effective change when these [VSM] concepts are embraced and exercised' (Jimmerson, 2017, p. 28).

It has been argued that the use of lean is highly applicable to all public service organisations (Radnor et al. 2006) and in UK healthcare it's use has been advocated as a way to eliminate waste (Young et al. 2004). Since then many have pointed to the promise of greater efficiency and effectiveness offered by the application of lean principles in healthcare settings (McIntosh and Cookson 2012; McIntosh et al. 2014; Roberts and Singh 2009). However, the impact on employees and perceptions of job quality remain disputed (Lindsay et al. 2014) with some highlighting cases where it has diminished job quality (Carter et al. 2011). Therefore, evidence in relation to employee perceptions of lean is mixed.

Previous studies have shown that lean methods, such as process mapping, can in-crease engagement (Cima et al., 2011; Hung et al., 2018; Lindskog et al., 2016). Yet in the NHS it has also been found that only 26% employees feel that their managers involve them in important decisions (Dawson & West, 2012, p. 63). This research

Methods

The research took place in an NHS Trust in the North-East of England. The trust was chosen as it represents a typical case in that it covers a large geographical area of urban and rural communities. The department which this research focused on consists of approximately 50 staff who work across a number of hospitals, planned care centres, community hospitals, care homes, GP practices and patient's homes. As such the work of the department is comprehensive but not atypical of other NHS trusts across the UK.

A qualitative approach was adopted in order to illicit the opinions and experiences of those involved in the process mapping exercise. Semi-structured interviews were conducted with each interview being held in a private room and recorded using a small digital recording device. Six broad, open ended questions were used to promote discussion. Data was transcribed verbatim and a thematic analysis carried out based on the research question.

Participants were selected via purposive sampling in order to identify appropriate participants for the study based on the following inclusion criteria;

• have participated in process mapping events

• process mapping event took place less than 2 years ago

In total 9 participants were interviewed for this research. Table 1 shows an overview of each participant's job title and management responsibility. Management responsibility was deemed an important inclusion criterion due to the focus on hierarchy and relationship with management. In order to maintain confidentiality, each participant has been assigned a participant number in order to protect their identity.

Table 1 Overview of participant demographics

Participant (P)	Job title	Formal Management responsibility
1	Advanced Dietitian	Leading a team of Dietitians Line management of lower grade staff.
2	Specialist Dietitian	Nil
3	Specialist Dietitian	Line management of lower grade staff.
4	Advanced Dietitian	Leading a team of Dietitians Line management of lower grade staff.
5	Specialist Dietitian	Line management of lower grade staff.
6	Advanced Dietitian	Leading a team of Dietitians. Line management of lower grade staff.
7	Specialist Dietitian	Line management of lower grade staff.
8	Dietitian	Nil
9	Specialist Dietitian	Nil

Research ethics

Ethical approval for the study was granted from the Health Research Authority and Northumbria University as well as the NHS Trust providing organisational consent.

Each individual who met the inclusion criteria was sent an email explaining the purpose of the research and what would be involved.

Findings

Effects of process mapping

Participants identified a strong link between the process mapping activity and improved team working. Firstly, there was a sense that the process mapping in itself facilitated team working.

> *'It helped us to do things as a team, clarify that we should all be doing the same thing, and when people weren't doing that specific thing we could go back and say, "Look, we agreed it here, this is the process," so it was good from that point of view' (P3)*

There was also acknowledgement that the new processes put into place following the process mapping had potential to improve team working,

> *'I think we're much closer as a team, despite being based over three sites because we can see quite clearly now ……. who's doing what at different points.' (P4)*

Changes to the nature of team-working were combined with a general sense that workloads had not significant increased as a result of the process. In fact the majority of participants reported no change to the demands upon them in their work. A small minority did suggest an increase in demands but others reported a more equal or shared workload,

> *'I think now that everyone is doing equal amounts of work, everyone feels much better, certainly myself. It's much easier to be able to spread the workload out now'* (P1)

At the same time a number of service improvements were described during the interviews. The themes resulting from these improvements were around standardised work, being more efficient and the effect of the improvements on reducing stress levels. The resulting efficiency was seen to provide further benefits, for, example;

> *'it's more streamlined, there are fewer steps and, in some ways, fewer people involved in certain parts of it, which reduces the waiting time for patients, reduces the variability in what happens etc.'* (P5)

A further sub-theme was also identified as the improvements made as a result of the process mapping having the effect of reducing stress levels for staff,

> *'it was just more making sure we were doing it properly and that we were doing it along certain times so it was less stressful, and hopefully it would be easier to manage'* (P2)

This is a positive finding and could be associated with findings in many of the other sections, particularly in relation to workload demands, engagement and job satisfaction.

The sense of improvements having resulted from the process mapping process were also linked to a strong sense of an increase in job satisfaction. The reasons given for

this were varied and were related to other aspects of employee engagement such as decision making, team working and sharing knowledge.

> *'Because there are so many things in an organisation like the NHS that are decided for you by someone that you just think, "Well, I don't know why he came to that conclusion that that would be right for us" or whatever, or that are generic and that don't really fit with our service, that it's nice that your processes and your decisions are made closer to home and closer to the people who are carrying them out who are doing it day in, day out, who can see why it fits or why it doesn't and what would be smoother. So, I think that's why it improves your job satisfaction.' (P5)*

One participant linked the increase in job satisfaction with the positive effects of being more efficient which is illustrative of the commonality between the research questions in this study.

Participation and empowerment

Participating in the process mapping activity was found to help raise awareness of each other and their individual roles and responsibilities within the team.

> *'So I think it was good to get different perspectives and different solutions, even if it was something we didn't think was going to work it was actually, no, maybe it gave us some ideas in terms of if the change we go with doesn't work, other places have done this, and actually that could be something to consider if we need to.' (P8)*

Nonetheless many of the participants reported no reservations to participating in the event and were actively looking forward to contributing,

'I was quite happy to join in with it, it was something I was quite pleased I'd been asked if I wanted to do because it meant that I felt I was going to be… my opinions were going to be valued as part of the trust.' (P7)

Interestingly whilst all participants did take part in the event some were apprehensive about possible changes that could result from the process mapping. This reflects wider differences in participants' feelings towards organisational change. Most participants reported being either resistant or apprehensive about change,

'A bit nervous initially, and just worried that it wouldn't work out. But I think, in the long-term, I can see some of the changes made have been a positive thing. I think it was a bit of a shock because you're having to shake up everything that you've ever done, it's that fear of letting go of control a little bit of your own work processes and patients'. (P4)

Others were more open to change but still acknowledged that it could be difficult, especially if they were not sure if it was a positive change to make.

Employee engagement

Participants reported feeling more engaged in their work following the process mapping event,

'I think, before, I was just feeling a bit fed up really and perhaps not that engaged because it felt like you were coming along dead ends quite a bit. Afterwards, it did -- it was scary, but I think it was quite motivating to try a different way of working.' (P4)

There was also a strong finding that participants felt autonomous during the process mapping event and also many felt more autonomy in their work following the event. This could be because the individuals had designed the process themselves and so had autonomy over it. Most participants talked about the control that they had both during the event and once the new processes had been implemented,

> *'I think in doing the [event] it actually made me realise that I could influence my work, and I think it was probably quite a nice arena to be able to suggest changes, because I think sometimes that's not always the easiest thing to suggest.' (P7)*

A small number of participants felt they had less control in their work following the creation of new processes, however, this was not cited as a problem, possibly because the participant in this case had been involved in making the decision to reduce the amount of control.

This difference from the existing literature may be due to the way in which the process mapping process was designed. Most of the participants described feeling involved in decision making. One participant commented on the effect that this had on them,

> *'if you're not in a position where you're normally making decisions about things, to be involved in a process that does is probably quite liberating, for want of a better word, to be able to think, "Yes, I can be involved in decisions like that". (P5)*

All participants reported that there had been an opportunity to give input into the process mapping by identifying new problems and identifying solutions. This seemed

to be valued by the participants with emergent themes also being identified, with the participants reporting feeling valued and listened to

> *'I think it helped having input into making change, or even just identifying what's not going well, or what works, I think that really helps in terms of making, making people feel involved in their work, and actually making people feel that they do have the power to change things, which I think the NHS as a whole doesn't necessarily promote change and improvement quite as well as it maybe should' (Helen)*

There were also links described between feeling listened to and other factors such as engagement, team working and feeling valued. Listening to team members is also an important part of distributed leadership.

> *'we were listened to, and that in itself makes you feel as if you're a bit more part of the team and as if you're a bit more of a valued member.' (P7)*

Leadership and teamworking

The sense of having greater levels of autonomy and control did not affect how participants perceived departmental management structures. But participants did feel that their knowledge and opinions had been shared with management and that, as a result, management had a better understanding of the team and its work. In particular participants valued the management presence within the event as it helped to ensure that changes were taken forward and the changes that were discussed were put into action,

> *'I think it had a positive effect because it was good to meet with management for us all to work through everything together and having the management there was much easier to be able to take some of the changes forwards' (P5)*

In this way there was a sense, from participants both with and without management responsibility, that the process mapping activity had helped break down barriers. This comment was from a respondent who line managed a small team;

> *'I think that there were quite large barriers between myself and the team before the event. I think probably going forwards after the event those barriers did begin to break down, because everyone had equal information sharing, so we were all involved in the decisions that made it better for the team.' (P1)*

Participation in process mapping seemed to enable employees to put their opinions forward in a way that was non-confrontational and supported by management.

The process mapping had a long-term effect on leadership after the event, with many of the new processes that were devised incorporating ways to share leadership within teams. Participants referred to the new responsibilities given to employees as part of the distributed leadership as a positive change,

> *'I think because [the process mapping event] had been a shared responsibility of all the team work so it has definitely improved the engagement within the team, so we feel more responsible towards the little processes that are happening and leading to better patient care' (P9)*

Emergent theme - Confidence in role

As the participants were all experienced health professionals it was surprising that an emergent theme was feeling more confident in their work. The confidence seemed to be around dealing with more administrative aspects of their job rather than the clinical aspects.

> *'I've got a better understanding about what we're supposed to be… well not what we're supposed to be doing, but the way we've agreed to do things I feel probably more confident in doing from one week to the next doing [part of my role] and probably checking a lot less with other people as to what they do.'*
> *(P8)*

This was attributed both to having clearer processes in place and better team relationships. However, this could also have been affected by the other factors previously discussed such as knowledge shared, distributed leadership and decision making.

Discussion

The impact of the use of lean methodology in the NHS remains highly contested. This study sought to build on previous work by developing an in-depth qualitative understanding of NHS employee's opinions on the impact of a process mapping activity. In developing the analysis of these findings three key themes have emerged centred around the impact of process mapping on: participation and empowerment; employee engagement; and leadership and teamworking.

Participation and Empowerment

Current literature emphasises the importance of voluntary participation for positive results (Jacobson et al., 2008; Nosenzo & Tufano, 2017; Rivera, 2015) but this

research has found further factors affecting participation. In particular it was found that knowledge sharing is an important part of participation in process mapping. This is in line with findings from research into effects of lean methodology on employees (Drotz & Poksinska, 2014; Ulhassan et al., 2014). In this research all the participants reported being happy to participate in the process mapping events. However, there was an even split between those who reported that participation was voluntary and those who believed it was not. This gives a difficult comparison to current literature as voluntary participation has been shown to have a more positive outcome on participants (Nosenzo & Tufano, 2017). There is a need for further research in this area.

Employee Engagement

Whilst findings related to participation were mixed there was much more consensus of the impact on employee engagement. Findings show that staff reported feeling more engaged in their work as well as citing the individual factors associated with increased engagement (autonomy, control, equal involvement). There was an increase in job satisfaction, staff felt less stressed, teamwork improved, and more distributed leadership was described. A number of studies have previously identified a link between process mapping and employee engagement (Cima et al., 2011; Hung et al., 2018; Lindskog et al., 2016). However, this current research adds a new dimension to this literature by using a qualitative approach.

The results showed that the reasons for the increase in job satisfaction and engagement were different for each respondent, this is to be expected as each individual will have different values and expectations for their work. However,

autonomy and control have been cited as significant factors to increasing staff engagement (Mauno et al., 2007; Setti & Argentero, 2011), thus suggesting that participation may have increased engagement by giving employees greater autonomy and control over their work. This is at odds previous studies where staff did not report an increase in feeling of autonomy and control (Brännmark & Holden, 2013; P. Stewart et al., 2010).

The participants in this study also described how after participating in process mapping events they felt more confident to make a decision or felt that they were given the freedom to do so – and in turn felt more engaged. This is in line with research that has found a significant relationship between decision making and engagement (Hagopian et al., 2009; Lindskog et al., 2016; Setti & Argentero, 2011). It also builds on the work by Kumar and Sia (2012), who have previously found that equal involvement can increase engagement.

Linked to the idea of being involved is the sense of being listened to. Kagan (2008) suggested that feeling listened to was a 'unique unitary concept' (p66) and used the importance of this to make recommendations for listening in the health and care environment. Others have equated leadership with being a good listener (Llopis, 2013; Rockwell, 2016) whilst The King's Fund (2012) report on staff engagement linked feeling listened to and staff engagement.

In contrast some research has previously found that lean methodology can increase job demand and burnout (Lindskog et al., 2016). Although they found an increase in job demand and burnout with implementation of lean methodology and Brannmark

and Holden (2013) reported increase in stress levels, this was not the dominant theme found in this research and in fact a number of participants reported a reduction in stress levels. On the contrary this study found that stress levels were reduced.

There was also an unexpected finding of standardised work being highlighted as a positive outcome of process mapping. This is interesting as the 5S lean methodology (Hirano & Hirano, 1996) describes standardisation of work as an important step in an efficient workplace. Perceived improvements in efficiency were notable as this supports findings from previously cited quantitative studies (Cima et al., 2011; Hung et al., 2018; Lindskog et al., 2016), but further explains why satisfaction increased.

Overall this study has added to the current literature on employee engagement both during and after using lean methodology in healthcare. The process mapping exercise has empowered employees in making decisions and having more control and autonomy in their work. If we compare this to the models of engagement from Bersin (2014) and HayGroup (2001) then the greater autonomy, control and decision making could be seen to have an impact on the factors described in the models of meaningful work, hands on management, positive work environment, growth opportunity, trust in leadership and tangible rewards.

Leadership and Teamwork

Findings related to leadership and teamwork corroborate the extant literature which has highlighted that the effects of lean methodology on hierarchy seem to be multi-factorial and strongly related to team working and shared leadership (Drotz &

Poksinska, 2014; Ulhassan et al., 2014). Employees reported a better understanding of work tasks, an ability to work with management and a reduction in barriers between teams and management. This expands on previous research which has found that barriers were broken down (Antonacci et al., 2018; Bille, 2014).

This study illustrates which barriers were broken down and how this happened which was mostly attributed to employees feeling listened to and having and having their opinion valued. It was found that the breakdown of barriers is attributed to equal information sharing, being listened to and everyone's opinions being appreciated by management. Current literature acknowledges that process mapping can break down barriers by promoting team working (Antonacci et al., 2018; Drotz & Poksinska, 2014). This study further links the breakdown of barriers between teams and management to distributed leadership.

The findings related to distributed leadership show that process mapping can be used as a tool to facilitate distributed leadership and better relationships between teams and management. This is in line with literature specifically relating to shared leadership (Carson et al., 2007; Oedzes et al., 2019; Wang et al., 2014). It was found that this also led to participants experiencing greater levels of confidence in their roles. This may be linked to analysis by Berwick (2011, p. 322) that "most graduates of most health professional educational programs suffer from considerable 'functional illiteracy' about the systems in which they work". It could be presumed that this could lead to a longer-term lack of confidence in using the administrative processes in place within a healthcare organisation and that using process mapping could help employees to have a better understanding of these systems thus

increasing confidence in work tasks. Further research is therefore required in order to explore the mechanism for this finding.

Overall there have been many studies that have highlighted the effect of shared leadership on team empowerment (Carson et al., 2007), effective service improvement (Fitzgerald et al., 2006), and reduction in the negative effects of hierarchy on creativity (Oedzes et al., 2019). However, this study shows that this also works in reverse in that if teams are empowered to be creative and participate in service improvement activities then this can result in a more shared or distributed leadership. This is especially significant for the UK healthcare setting where traditional hierarchies still exist (Gordon et al., 2015) and where efforts to develop more integrated health and social care have been found to come up against a number of leadership challenges (Connolly et al., 2020; Elliott et al., 2020).

Conclusion

This is a multi-factorial subject area which dips into many areas of current literature including lean methodology, change management, team working, leadership and staff engagement. This study has considered these factors and interpreted them using the lens of employee engagement and hierarchy. In doing so this research makes a significant contribution in a number of areas around process mapping. Table 2 gives an overview of the findings of this study which are thought to provide new evidence within this subject area.

Table 2: Findings suggesting new evidence in this subject area

Finding	Explanation of new evidence

Feeling listened to	This provides formal research findings to add to the grey literature available in this area
Confidence in role	This emergent theme was not shown during the literature review and further research would be beneficial to find if this was common to other lean projects
Reduction in stress levels	Lean methodology has been shown to increase job demands on staff, this paper opposes this by finding that staff felt they had a more equally shared workload and felt less stressed

The research showed a positive effect of participating in process mapping. It was found that participation is multi-factorial and is not simply related to whether the participation is voluntary or not as is suggested in the literature (Jacobson et al., 2008; Nosenzo & Tufano, 2017; Rivera, 2015). There was an emphasis on history, team dynamics and inter-personal concerns (for example, confidence that opinion would be valued or worries that opinion would change relationships) which is cited in the literature as important within group relationships but not directly related to participation. This study therefore adds to the understanding of factors affecting participation.

This study found that participation reduced stress levels. This contrasts with earlier studies that have shown an increase in job demand, burnout and stress. It is possible that the implementation of lean methodologies was carried out in different ways in this study which highlights an area for further research.

Results concur with the earlier studies that show participation in lean methodology can break down barriers in hierarchies. This disputes the idea that management and hierarchy is a barrier to using lean methodology in the public sector. On the contrary it is suggested that greater use of process mapping may help support a move towards more distributed and shared forms of leadership and enhanced employee engagement.

KEY POINTS

- Participating in process mapping was found to: increase employee engagement, facilitate team working and distributed leadership, increase job satisfaction and reduce stress levels.
- Participation broke down barriers with management, helped participants to feel listened to and increased staff confidence in their role.
- Effective use of process mapping can actively help introduce a system of distributed leadership into NHS teams.

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