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PhD Thesis

Evaluating service level outcomes from implementing Seddon's Vanguard Method, a service improvement framework, in an occupational therapy service in England: A single case study

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Abstract

Background

There is lack of research regarding service improvement and occupational therapy, most research is focussed on clinical intervention improvement to demonstrate service improvement, which is a narrow focus compared to the whole service improvement.

This service improvement study applying Seddon's Vanguard Method to a critical care unit occupational therapy service in England is original research, answering an empirical question that will be of interest to the occupational therapy practice community.

Method

Research question: How and why are service level outcomes impacted, after implementing Seddon's Vanguard Method, a service improvement framework, to an occupational therapy service in England?

Case study methodology was employed as the research is novel, and, exploring the phenomenon (service improvement) in depth in a particular context as it is less known. Furthermore, case study methodology is used when there are how and why questions to be answered in the research question and offers the opportunity to use mixed data to understand the phenomenon from multiple perspectives. Mixed quantitative and qualitative data were collected to provide multiple perspectives regarding service level outcomes impacted by the chosen service improvement framework. The quantitative analysis was carried out using descriptive, one-way ANOVA and Tukey Kramer HSD statistical analyses; and the qualitative data were transcript analysis of interviews using thematic analysis.

Findings

1) The research identified themes of the service level factors which formed feedback loops. Four loops that had negative impact (vicious cycles) on service delivery – staff shortages, snowball effect of staff shortages leading to more staff shortages, funding arrangements, bed flow management external to the critical care service, staff concerns and staff challenges not being heard. To interrupt the vicious cycles was a

balancing loop representing the staff raising the concerns and barriers to deliver their work. Such feedback loops are related to systems thinking concept.
2) The themes that were identified were also identified to form a developing typology of struggle for the critical care staff to improve the service. The term struggle was identified as there was a power imbalance between the critical care staff and the organisation impacting their agency to improve the service.
3) The descriptive analysis of the quantitative data indicated there were some notable differences: the number of missed occupational therapy sessions between years 2022 and 2021-2019 increased by 2%; the number of days between referral to 1st contact with the patient between years 2022 and 2019, reduced to average of 0.3 days from 4.8 days respectively; counting the number of times the terms occupational therapy vs the abbreviation OT was said within the evaluation transcripts before, during, and after the research implementation period, showed occupational therapy was said 31%, 19% and 74% respectively.
4) Going through the service improvement using Seddon's Vanguard Method intervention elucidated the challenges for the critical care staff in establishing their professional identity, but also how to improve it.

Conclusion

The novel contribution from the research, is that in going through the Seddon's Vanguard Method for service improvement, it has elucidated for the sample critical care occupational therapy staff; a typology of struggle to improve their service, their legitimacy, and jurisdiction in this specialty, and ultimately how to improve their professional identity.

Chapter summaries

Chapter 1 Background

Chapter one brings to attention the main topics for the supporting background information for the research. The chapter explores the rationale as to why this thesis focuses on service improvement applying Seddon's Vanguard Method (SVM), a systems thinking service improvement framework as the intervention, and the impact on service level outcomes when applying SVM to an occupational therapy service in England. It builds on this with reference to the record of quality improvement in healthcare and its challenges, the frameworks used for service improvement traditionally in healthcare, interpreting service improvement as a wicked problem, and discussing what is the relationship between service improvement and occupational therapy relating to what publications there are on the topic of occupational therapy and service improvement. The chapter also showcases occupational therapy, as in general it is not a well-known therapy, and the research setting will be an occupational therapy setting. Hence this part of the chapter explains what occupational therapy is in more detail from history to its current UK version.

Chapter 2 Scoping Literature Review

The chapter shows the step-by-step process of the scoping review carried out. Only 7 pieces of relevant literature found, mostly chapters in books, indicating that there is limited research literature that includes Seddon's Vanguard Method for service improvement in health or social care, and much more limited for occupational therapy setting (1 consultancy report directly worked with an occupational therapy department). The thematic analysis of literature found two main themes, one redefined the term 'people centred services' and the other indicated cost efficiencies from applying the service improvement method. From the review the aim, objectives and research question for the PhD research were identified, the latter designed around the PICO framework.

Chapter 3 Methodology

This chapter identified and provided the rationale for the ontology, epistemology and methodology that fitted with the research question to be explored and answered. The research is building on existing theories applied to a new setting. Justification for Yin's case study methodology for mixed data collection was discussed alongside other alternatives regarding realist methodologies that were rejected. Included in the chapter was also discussion of the details of the research site and participants, data collection and analysis methods, the ethics process, the recruitment strategy and how rigour was going to be achieved in the research.

Chapter 4 Findings

This chapter organised the data and findings around the phases of Seddon's Vanguard Method, the service improvement framework implemented as part of the research process, that will help to answer the research question: Check-Plan-Do, and additionally Check phase again after one iteration of the cycle, to represent the findings post the research implementation period. Data before and after were both quantitative and qualitative. The only data that were collected during the research implementation period, was qualitative data from a focus group interview of staff participants. Statistically significant data sets and six overarching themes from the qualitative data analysis, were identified.

Chapter 5 Discussion of findings

The chapter synthesised the quantitative and qualitative data, their relationships, and interpretations, with reference to systems thinking approach, the struggles involved for critical care occupational therapy staff in trying to deliver service improvement and establishing themselves as a credible profession in the multi-professional team. Additionally, some of the findings reinforced that SVM was related to systems thinking approach.

Chapter 6 Limitations of the research

Brief discussion on the limitations of the research, how and in what ways was the impact of this reduced throughout the research.

Chapter 7 Researcher reflexivity

No research is neutral. Reflexivity is described as a "*concept that researchers should acknowledge and disclose their selves in their research, seeking to understand their part in it, or influence on it*" (Holmes 2020, p.2). The chapter scrutinises the research from personal and professional perspectives, writing from the first-person stance, evaluating the influence of values, beliefs and assumptions throughout the research process. The content is framed around Savin-Baden and Major's (2013), three key ways to review and evaluate positionality.

Chapter 8 Conclusion

The chapter started with a brief commentary from a helicopter view on having to work remotely as a researcher due to COVID19 strategies and the impact of relationships with staff on the research site; and due to COVID19 the impact of not fully being able to apply Seddon's Vanguard Method for service improvement. Following on from this are discussions of the original contributions from the research using a nested approach to the organisation of the content, starting with the critical care service in the research, critical service in general, occupational therapy service in general, and pre-reg occupational therapy education. Then end with next steps regarding dissemination of the findings of the PhD research.

Chapter 1 Background

1.1 Introduction

Chapter one has two focuses, from 1.1. - 1.4. the content brings forward the rational for the research; and 1.5. - 1.6. explains what occupational therapy is in more detail. This thesis focuses on service improvement applying Seddon's Vanguard Method (SVM), a service improvement framework as the intervention, and the impact on service level outcomes when applying SVM to an occupational therapy service in England. Service level outcomes in SVM are identified from the demands of the service users, and can be about process or outcome changes, to potentially impact effective service delivery. The chapter will provide a background to draw upon: the history and development of systems thinking, the concepts of tame and wicked problems to explore the government attempts to improve health and social care; consider health and social care through the lens of complex adaptive systems; argue that systems thinking approach provides a more helpful framework with which to view service improvements, specifically an implementation framework that is SVM. Then finally, discuss a specific focus outlining occupational therapy service, which exemplifies a complex adaptive system and one which better needs to demonstrate its ability to deliver effective and efficient services, in order to justify continued funding in a progressively cash-strapped NHS and social care. The chapter concludes with the aim of the thesis.

Using SVM as the service improvement intervention in an occupational therapy service is the focus throughout the thesis. Occupational therapy services are in health and social care organisations, and can be in a variety of other settings, such as schools and charities. Hence occupational therapists within these services should be able to direct service improvement of their services, this is a key interest of the thesis.

1.2. Background

In England successive governments have attempted to develop new ways of enabling health and social care to maintain/improve the quality of services delivered, usually by employing top down approaches (Advice[Ni] 2011). Improving service

delivery in health and social care organisations is difficult, it may feel as if it is insoluble, even more so within the current resource, which includes staff numbers, and funding constraints. More local context focussed service improvement is part of quality improvement, as it is concerned with improving aspects of quality, such as: "*safe* [practice], timely [e.g., reduced waiting times and delays]*, effective* [of benefit to the service user], *efficient* [e.g. reduction in resource waste, which includes costs]*, person centred, equitable*" (The Health Foundation, 2013, p.7).

1.2.1. Approach to service improvement in health and social care

Ham (2014) states that centrally driven government reforms in health and social care do not work, they mostly fail, and are costly. For example, the restructuring of health and social care as a consequence of the Health and Social Care Act (2012), resulted in unnecessary decimation of the NHS and social care at a cost of £1.5 billion (Appleby 2015). A new act passed April 2022 regarding health and social care, Health and Care Act 2022, the focus is on "*supports collaboration and partnership-working to integrate services for patients. Among a wide range of other measures, the Act also includes targeted changes to public health, social care and the oversight of quality and safety*" (King's Fund 2022). Although the Act is said to be less controversial then the 2012 Act, two areas are still problematic, in that: i) it does not address the workforce shortage challenges, and ii) the cap on social care cost penalises those with less assets (Murray 2022). People deliver services and quality, and Backhouse (2020) supports this by stating that for effective service improvement 80% is down to people and 20% to technological processes.

The reasons given for the overall failure of reforms are that top-down approaches lead to standardisation and specification, which according to Seddon (2005, 2014) and Nuffield Trust (2018b) do not:

- fit well with the uniqueness of different services;
- sustain service improvement and effectiveness over time;
- align with the staff's views of the way they want to work to meet the changing needs of the service users;
- enable decisions to be made about the work near the work;
- take note of the influences acting on the system and;

- consider that top down 'static' solutions assume generalisation across changing contexts and times.

Constantly reforming health and social care is political and is vulnerable to continuous change reflecting shifts in political ideologies. The problem with continuous change is that policy makers are always forward looking to set up the next reform, without giving time to learn from what has happened in the past to inform the next change, so a potential for past mistakes, inaccuracies and incongruities are left to continue (Edwards 2018, Nuffield Trust 2018b). Moreover, Ham (2014) recommends that any further changes to improve services, should be driven from within the organisation from a bottom up, not top down, approach so that service users and service providers should be empowered and supported to drive and deliver the change (Seddon 2005, Ham 2014). A current example of this more collaborative bottom up approach is the Vanguard New Models of Care (VNMC). Somewhat paradoxically it has been instigated centrally by NHS England in 2015, as part of the Five-Year Forward View policy (NHS England 2016). The VNMC comprise of 50 'Vanguards', community commissioning groups (CCGs). In the current political administration CCGs no longer exist and are replaced by ICBs (integrating care boards). These boards have been given responsibility to lead in developing services that will be the blueprint of future care models going forward as part of the NHS Five-Year Forward View (NHS England 2016). This policy is delivered through local solutions and leadership with the aim to develop a diversity of new blueprints of care, fit for purpose to deliver preventative public health, remove barriers to healthcare and improve patient self-management (Ham and Murray 2015). A further paradox of the VNMC initiatives is that although encouraging locally designed services, a desired outcome is to develop blueprints for delivery for similar services elsewhere. Essentially blueprints, through repeating standardisation and specification usage, could constrain the ability to be local by design and may lead to failure to sustain change or improve (Seddon 2005, Nuffield Trust 2018b). This notion is somewhat supported by the King's Fund review of VNMC (Naylor and Charles 2018). This review identified that because the initiative is centrally driven by NHS England, the nationally determined metrics are constraining the idea of local design, driving one fix for solutions, and not promoting a systemic consideration of

the issues. Adding that, for national bodies striking a balance between promoting autonomy in innovating and performance managing remains a challenge. Seddon (2008) and Edwards (2018) therefore suggest the initiative in fact reflects a continuation in government dressing up traditional ways of thinking (e.g., standardisation) about service improvement as new (e.g., VNMC).

From the above it can be debated that effective sustainable change will occur if at the top there is a clear shift away from traditional thinking, practice, and culture in how to solve service delivery issues. Seddon's Vanguard Method could be a possibility of a shift away from tradition but needs to be explored under research conditions to understand its difference in contribution to service improvement.

1.3. Tame and wicked problems

A useful way to understand the failure of government to effect service improvement is through the concepts of tame and wicked problems. It could be argued that the repeating issues for the UK government to reform ending in failure, or limited improvement, experienced both in health and social care, could be attributed to reductionism in the solutions identified. This notion is based on the premise that service improvement is a tame problem. A tame problem is a stable problem, as a clear and agreed solution can be found, e.g., a mathematical equation, analysing the structure of a chemical compound, or applying an arbitrary rule/target (Rittel and Webber 1973). A tame problem solution is externally formed and can continue to be used long term even though the reason for the solution does not hold as time passes (Rittel and Webber 1973, Seddon 2008, 2014, Ham 2014). However, it is questionable whether service improvement reflects a tame problem given the complex nature of health and social care organisations.

Instead, Rittel and Webber's (1973) opposing concept - wicked problem, provides a better fit for understanding service improvement, a complex problem, in health and social care. Rittel and Webber (1973) set out 10 characteristics (see figure 1.1.), to summarise wicked problems and to use as a guide to work with them. There is resistance to working within a wicked problem frame because it is challenging and time consuming: it involves usefully managing large numbers of people's competing

views/opinions; the economic burden is huge and, the knowledge about the problem is unclear, contradictory, incomplete, changeable, and temporal (Rittel and Webber 1973).

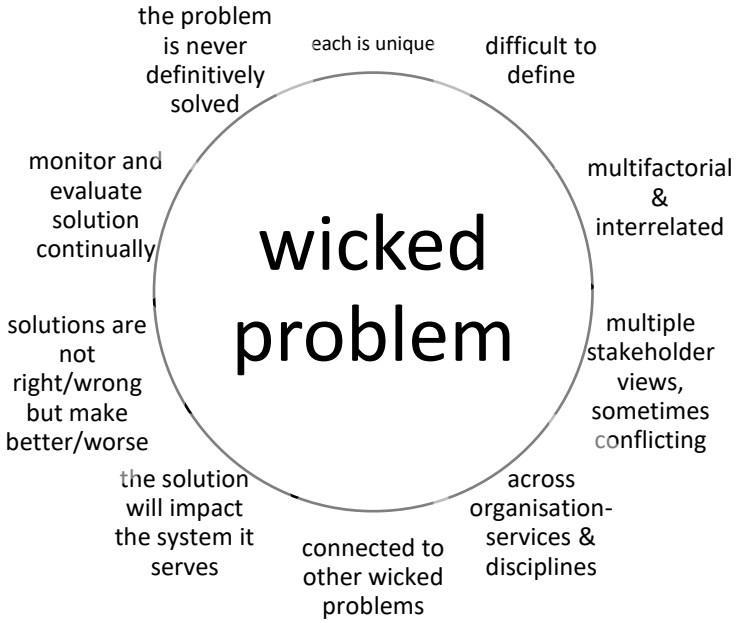


Figure 1.1. Characteristics of wicked problems (adapted from Rittel and Webber 1973)

Rittel and Webber (1973) stated that it is accepted that professionals in social systems organisations, ergo health and social care, deal with service improvement as a tame problem. However, they clarify that the efficiency gains from this approach is temporary, as applying tame problem thinking to a wicked problem results in systemic worsening of equity for the public (Rittel and Webber 1973). A current example that illustrates this, is waiting times in emergency departments; an edict from the Department of Health for timely throughput of patients within 4 hours of them presenting, an arbitrary target (Ham 2014). Most of the relevant information here was found in think tank reports, a legitimate resource on service improvement interpretation of data and it is reasonable to understand their expert perspectives on the interpretation of data. However, these reports indicated that this target has led to increasing the numbers of people waiting to be seen at the emergency departments, i.e., worsening the situation (Nuffield Trust 2019a, Anandaciva and Thompson 2017). This solution has failed (Black 2017, Anandaciva and Thompson 2017, Nuffield Trust

2019a), possibly due to the problem being framed as tame and not wicked. The tame problem aspect is that this one solution was going to solve this multifactorial problem, a complex problem. A complex problem needs an approach that understands how to work within complexity, such as the wicked problem frame. As Black (2017) states the emergency department 4-hour target failed due to a number of factors, e.g., high turnover of staff, lack of/issues with operational management. Consequently, a target based on knowledge will serve the service improvement purpose, an arbitrary target will lead to gaming ("manipulation of the situation or the data to make performance appear better than it actually is" (Mears 2014, pg. 293)) and make the service perform worse (Bevan and Hood 2006, Hood 2006, Ham 2014, Mears 2014, Black 2017). Therefore, waiting times may be conceptualised as a wicked problem, as it is a multifactorial issue involving many stakeholders and adjoining services and, cannot be resolved by making staff work to an arbitrary rule (Edwards 2018, Nuffield Trust 2018a&b)

Hence the concept of a wicked problem is related to today's service improvement, as it is part of the bigger system of integrated services and public sector, involves multiple stakeholders, and the problems are trying to solve local problems the results of which have wider impact. When dealing with the complex problem of service improvement, before thinking about the solution, firstly the problem needs to be understood under the wicked problem frame. When solutions come from knowledge and understanding of the complex problem, i.e., service improvement, then, a workable solution may be found, which is termed, a clumsy solution, i.e., a pragmatic solution for here and now, that is formed using the current resources at hand (Grint 2008, The Health Foundation 2010, Nuffield Trust 2018b). A clumsy solution is a multi-factorial (non-linear), local, response to a complex problem in the current context and could change as the context changes (Grint 2008, Seddon 2008). To solve a wicked problem there needs to be bricoleurs, people leading the project that 'stitch together' what is available to ensure practical success for the current circumstances (Rittel and Webber 1973, Grint 2008). Grint (2008) refers to the term 'stitching together' because for the solution there is no clearly findable perfect answer, hence a clumsy solution transpires. But there are also challenges to applying the wicked problem approach, in that it is costly initially and takes time to

embed as it does involve multiple stakeholders (Rittel and Webber 1973, Grint 2008).

This content is developing understanding that service improvement is a complex problem, hence the solutions to be framed to answer the complex problem will possibly be more relevant and lead to improving service effectiveness. Hence any service improvement framework applied should be able to work with complexity and that acknowledging that any solution/s for service improvement is timebound (i.e., clumsy solution), then the solutions should be revisited regularly to make sure that they are still relevant for effective service delivery.

1.3.1. Health and social care as complex adaptive systems

Before looking at potential solutions, it is important to acknowledge that health and social care organisations are fundamentally complex adaptive systems (The Health Foundation 2010, Ham 2014). Complex adaptive systems can be summarised as:

- dynamically complex - as there are a number of shifting and changing factors internally and externally, simultaneously influencing and shaping their relationships (Sharts-Hopko 2013);
- the problems of the system are not clearly defined and quite uncertain - as the problem is context, time and perspective related and can cause differences of opinions between stakeholders (Sharts-Hopko 2013).

That is to say that for services to maintain stability/equilibrium, they must use a myriad of external and internal existing resources to self-organise and be adaptable in responding to change/unintended variables (Seddon 2008, The Health Foundation 2010).

We have to apply a framework that will deal with complexity when addressing service improvement within health and social care. Systems thinking approach has the possibility to address the complexity of improving health and social care services in that it offers a framework to work with perceived wicked problems. Systems thinking provides an approach to understand and analyse the complexity of a wicked

problem, in relation to services and organisations, by identifying patterns in relation to how the service is behaving and performing from multiple data points/ perspectives, then how to map them out to form a mental model of the service from within and influencing external factors, to then identify points for action/s as possibility/ies of changing the pattern (McAlister et al. 2022, Meadows 2009).

1.3.2 Systems thinking and organisations

Applying a systems thinking approach to an organisation is not a novel notion, it has existed in management science since the 1940s (Seddon 2008, Mowles et al. 2010). However, systems thinking approaches for service improvement appear more widespread in industry rather than health and social care. A more obvious reason may be that the well-known authors such as Ackoff (1971), Deming (2000) and Ohno (1998) are linked to manufacturing and production line industries. Examples of other reasons are:

- there are comparatively few publications to disseminate knowledge about systems thinking approach and service improvement (Ackoff, 2006, Zokaei et al 2010, 2011);
- it is suggested that staff educated in the western world are habituated to seek and work within linear cause and effect ideology in health organisations (ergo social care organisations) (McAlister et al. 2022, Yama and Zakaria 2019, Rittel and Webber 1973) and find the ideas of "ambiguity, paradox and complexity" from system thinking approach cause unease, challenge the status quo and appear counterintuitive (Mowles et al. 2010, p127). A couple of examples of these are: i) Service performance is mainly driven by the system not just the employees. Deming (2000) identified through his management research that, the performance of a service/organisation is 94% the system and 6% attributable to other factors (which includes staff). He was trying to illustrate that the main impact on how the service works is the systems that shape the processes and practice. Hence by changing the system this will change the performance of the service; ii) Economies of scale do not save money. Examples of economies of scale in health and social care organisations are, doing more with reduced funding or told to work faster while keeping the same staff levels, these usually result in negative effects,

> e.g., the work costing more because of hiring agency staff to meet the output (Seddon 2008, 2014).

The focus of systems thinking approach on the manufacturing industry and factory production lines was to improve wasteful activity/ies, timeliness and 'just in time' (JIT) goods delivery (i.e., only receive enough necessary goods so as to reduce waste) (Ohno 1998, Deming 2000). The first two comfortably relate to health and social care service delivery and; the latter is relevant for hard goods aspects for health and social care, but it is unclear if it is transferable to people services (Seddon 2005, Zokaei et al. 2011). There are many systems thinking approaches, as would be expected as these are conceptual viewpoints trying to explain and understand complexity, and some examples are: *Soft Systems Methodology* creates a rational mental model of the 'messy' picture of the complexity of organisations only, it is not directly to work with a wicked problem as soft systems work better with tame problems, but it does help to build the detailed picture of the interrelating workings of the system (Checkland and Scholes 1990, Stowell 2009) and; *Lean Thinking*, refers to tools that help to standardise how to remove waste and measure the related change (Ohno 1988, Womack and Jones 2003).

The discussions demonstrate that health and social care service improvement may be defined as a wicked problem. Hence, systems thinking approach provides a framework with a complex problem to find a solution, within the local context of the service, taking into account the wider health and social care context. Moreover, Periyakoil's (2007) explanation that a wicked problem is not only multifactorial, but these factors are changing, contradictory and interdependent and local, lends further support that service improvement is complex. It can be said that methods that work compatibly with complex systems should be applied to break with existing traditional approaches to service improvement, to assist with producing effective sustainable solutions. As Ackoff (2006) suggested, systems thinking approach applied to a service creates a system that is responsive and adaptive within the complexity of what is happening when faced with change – the service does not halt or go into crisis when change occurs.

Thus far presented is an argument that for effective service improvement there needs to be working awareness that by repeating old patterns of thinking or action is doomed to fail or limits success of change. Indeed, for service improvement to be successful the implementation framework must have some grounding in systems thinking approach to work with complex adaptable systems and wicked problems (Rittel and Webber 1973, Sharts-Hopko 2013).

1.4. Implementation frameworks for service improvement

(**Please note**: Seddon's (2003) Vanguard Method, is a systems thinking approach to implementing service improvement through improving effectiveness. This is completely unrelated to the much later conceived initiative by NHS England of the Vanguard New Models of Care, trying to discover blueprints for integrated service delivery that was rolled out from 2015).

To implement service improvement a number of frameworks already exist as part of quality improvement in health and social care, e.g., Plan-Do-Study-Act (PDSA) cycle, Six sigma - define, measure, analyse, improve, control approach (DMAIC), root cause analysis, all originally designed for manufacturing/production line industry (Hughes 2008). The focus of the following section will be on two systems thinking approaches to service improvement implementation frameworks. One that is frequently used in health and social care, Plan-Do-Study-Act (PDSA) cycle by Deming (2000) (Reed and Card 2016). The other, which claims to be uniquely designed for the service industry, i.e., health and social care, Seddon's Vanguard Method (SVM), Check-Plan-Do cycle (published in his seminal book 'Freedom from Command and Control: A better way to make the work work') (Seddon 2003). A service industry is an organisation that provides a service/s that is useful for the customer and fulfils their particular need/s, but the end product is not hard goods but intangible goods, e.g., transportation, entertainment services, or health care services (Seddon 2005).

The most frequently used and referred to quality/service improvement implementation framework in health and social care literature is Deming's (2000) PDSA cycle (Taylor et al. 2014, Reed and Card 2016). Deming's PDSA Cycle could be considered to be a framework of how the identified solution for a wicked problem can be actioned on the complex system. Reed and Card (2016) elaborate that PDSA has unquestioningly been adopted by health and social care because of its

established status to implement small change and, add that it is used on the wrong assumption that it may be effectively used as a stand-alone framework. Knowing that PDSA was originally designed for the manufacturing industry (Deming 2000), Taylor et al. (2014) in their systematic review, add support to Reed and Card's claim. Taylor et al. (2014) conclude that PDSA is frequently used in healthcare as a change implementation framework with variability in how it is implemented, which compromises its effectiveness as an improvement method. Moreover, Reed and Card (2016) add that PDSA is effective as part of quality improvement if used with other tools and measures, the choice of which is influenced by the broader methodological approach being followed, e.g., change model, lean method.

In summary the differences when comparing SVM to PDSA are that (Seddon 2003, 2005, Deming 2000):
-SVM claims to be uniquely designed for service organisations, whereas PDSA was designed for manufacturing and has been adopted for use to health and social care;
-SVM is a 3-phase cycle that starts with trying to understand and identify the problems through multiple stakeholder engagement before planning, trialling, reviewing. PDSA cycle starts with planning how to implement change/solution without guidance as to how to effectively arrive to the solution to trial initially;
-SVM claims its implementation process identifies emergent problems which may lead to sustainable outcomes that the public may want and potentially redesigning the service in the way the staff want to work;
-Both PDSA and SVM are iterative processes for different reasons:- a) SVM iterates through the cycle, to then address the emergent knowledge to enable reduction in wasteful activity and; b) PDSA is solution focussed through trial and error (Seddon 2003,2005, Taylor et al. 2014, Reed and Card 2016).

It could be conceived that SVM's 3-phased cycle, check-plan-do (see figure 1.2. and 1.3.), is trying to solve the wicked problem of service improvement. A wicked problem is a problem regarding a social phenomenon, i.e., service improvement, that is hard to define, has multiple factors that have influence, and the solutions are contextual and time limited (Ritte and Webber 1973). SVM phases are related to the 10 characteristics of a wicked problem (see figure 1.1. & 1.4.). Seddon (2003, 2005)

sets out that the SVM cycle enables understanding of what are the: effective work processes, problems and pinch points that are making the system and staff work the way they are, to then find solutions to improve the service for the benefit of the service users (see figure 1.3.). This aligns with Rittel and Webber's (1973) characteristics of a wicked problem (see figure 1.1. and 1.4.).

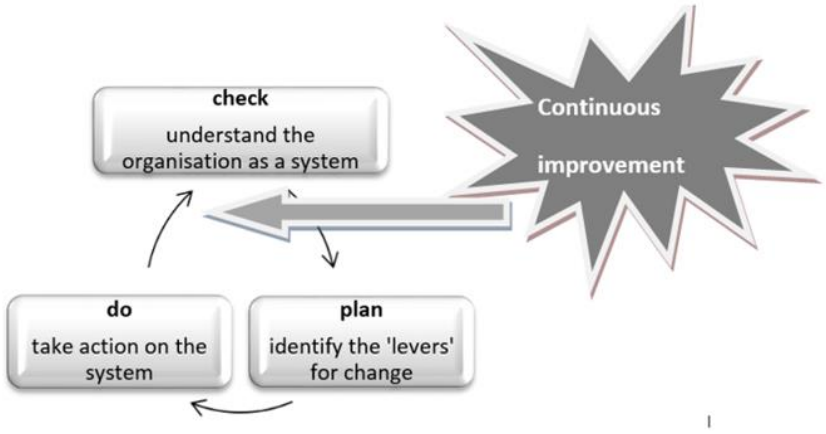


Figure 1.2. Seddon's Vanguard Method, Check-Plan-Do (adapted from Seddon 2005, page 101)

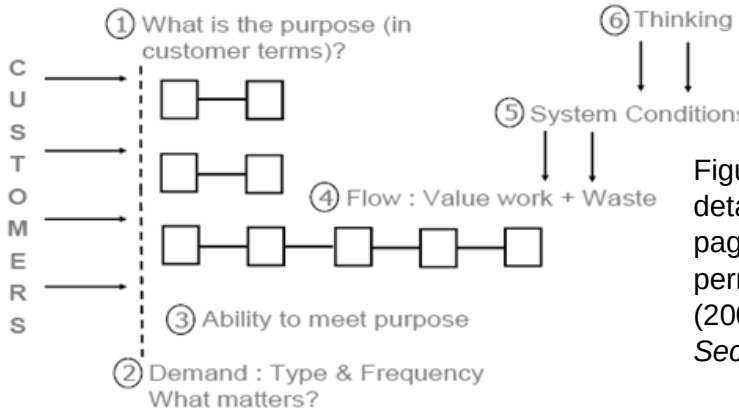


Figure 1.3. Vanguard Method cycle, detail of Check stage (Seddon 2008, page79, [Figure reproduced, with permission, from Seddon, J. (2008) *Systems Thinking in the Public Sector*, p.79, Axminster, Triarchy Press])

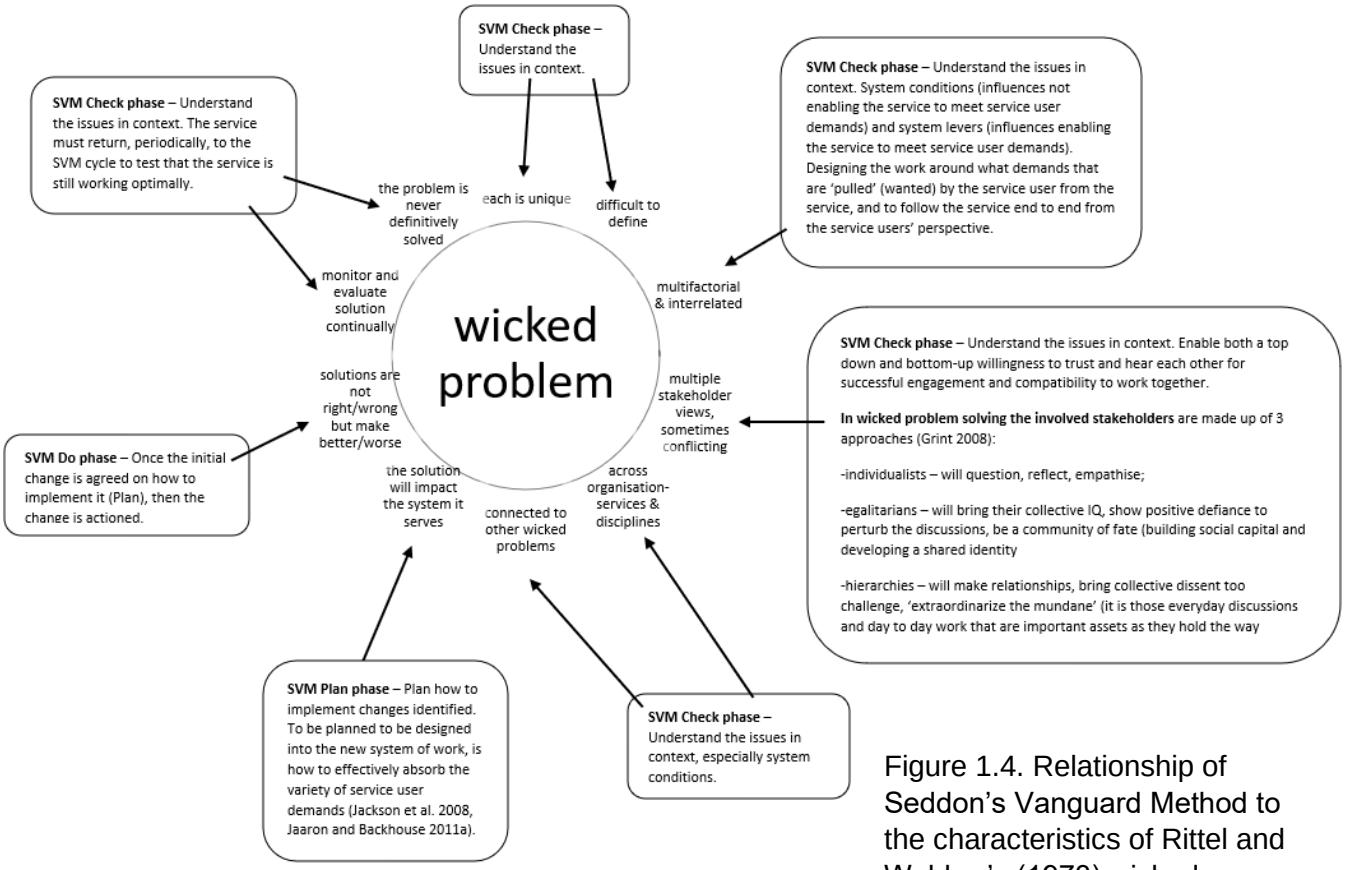


Figure 1.4. Relationship of Seddon's Vanguard Method to the characteristics of Rittel and Webber's (1973) wicked problems

SVM has been criticised as being an implementation framework not for systems thinking approach but more a process thinking approach. As like PDSA, it is said to be based on lean principles, as it follows the work end to end, but differently for SVM it is uniquely informed by the narrow perspective of service user experiences and service demands, an outside-in approach (Jackson cited in ODPM 2005, seddonwatch.blogspot.co.uk 2012, Ssenyonga 2012). However, SVM can be explained in terms of the main components of systems thinking approach and this is summarised in Table 1.1.

Table 1.1. Summary of the relationship of Seddon's Vanguard Method to systems thinking and theory

Systems thinking approach main components (as identified from Reynolds and Holwell 2010)	SVM Focus	SVM Purpose	SVM underpinning and influential theory
Considers multiple perspectives	Service is the system or subsystem. Starting point is service user experience.	To understand the multiple factors acting at service level through service user experience. To find the emergent knowledge.	Double loop learning - To challenge the underlying assumptions, values and beliefs. Intervention theory - Knowledge must be gathered to understand and define the purpose with a variety of representative stakeholders so that all feel responsible to meet the purpose. PDSA cycle (Deming 2000) – SVM is developed from the work of Deming. Deming's cycle was developed from TQM theory, that is meeting customer needs through identifying problems and eliminating it, and all parts of the organisation are accountable for

			delivering quality (Deming 2000). Change management theory - Applying a model to support the staff and organisation through the change process.
Considering interdependencies and checking behaviour over time	Service is a subsystem nested within macrolevel system. Service has interacting interdependent subsystems within it.	Seeks compromise with higher level systems initially. Ensure that the change is still fit for purpose. To find the emergent knowledge from within the service.	Double loop learning - To challenge the underlying assumptions and beliefs about the current strategies and techniques being applied. Organisational behaviour theory – To understand the influence of culture, motivation, structure. procedure and processes. Change management theory - Applying a model to support the staff and organisation through the change process.
Making boundary judgement	Service boundary is set by service user demands.	Any constraints from the 'edges' are identified as subsystem conditions	Organisational behaviour theory – To understand the influence of structure, procedure and processes.

		(bringing waste demand), and the impact will be reduced or removed.	

In general, systems thinking approach is about finding the emergent knowledge and SVM tries not to deviate from this. Rather SVM may be said to enable this by offering an implementation process for systems thinking approach, pragmatically designed for the service industries. The main challenges in implementing SVM successfully are to do with engaging higher management to support the change, staff suspicious of or resistant to change, and wider organisational processes, and it is unclear how they overcome this (Zokaei et al. 2011). SVM is developed from PDSA and, the issues raised in SVM are similar to that experienced by Deming's (2000) Total Quality Management (TQM) method for improving meeting customer needs organisationally, which PDSA is built from (Mosadeghrad 2014). Hence SVM in trying to address a wicked problem has to work at multiple areas and perspectives in the Check phase to reach an agreed solution by enabling all to understand the issues in context, leadership at every level to come together and lead the implementation, both top down and bottom up collaboration, a safe space where open and innovative discussions can happen and, willingness to trust the process to work towards a successful outcome (Seddon 2003, 2005, Zokaei et al 2011). This is mirrored in the 2017 document from the King's Fund (Jabbal 2017) 'Embedding a culture of quality improvement' which states that required are: time and resources, new approach to leadership, coproduction and, staff engagement and, critical is the fidelity to the chosen approach.

There is very limited published scholarly discussion regarding the theoretical underpinning of SVM (Middleton 2010, Zokaei et al 2011, Jaaron and Backhouse 2017). Therefore, it may be useful to clarify the theories that ground and influence it (see Table 1.1.) to understand SVM. Where there is published literature, the theories that are referred to in underpinning SVM are: the aforementioned systems thinking approach, double loop learning and, intervention theory (Seddon 2003, 2005, 2008,

Middleton 2010, Zokaei et al. 2011, Pell 2012, Seddon 2014, Jaaron and Backhouse 2017). Double loop learning is commonly integrated across all systems thinking approaches. In that double loop learning is not just about fixing the problem (single loop learning), it goes beyond this to challenge the underlying assumptions, values and beliefs and, the current strategies and techniques being applied (Argyris 1976), this relates to the SVM cycle and its iterative process. Intervention theory is part of organisational development theory, proposed by Argyris (1970). It states that for an intervention to be effective, knowledge must be gathered to understand and define the purpose with a variety of representative stakeholders so that all feel responsible to meet the purpose (Argyris 1970), this is a large part of the SVM check phase. The literature review revealed there is very limited critical evaluation of the underlying and related theories of SVM and effectiveness of SVM, i.e. relationship to theories of organisational behaviour and change management, which include e.g., leadership, culture, public involvement, motivation theory in relation to employees, which are fundamental to enable, embed and sustain change (Schein 2010, King and Lawley 2013, Gopee and Galloway 2014, Health Quality Improvement Partnership (HQIP) 2017). Although it can be said that organisational behaviour and change management theories are implicit rather than explicit in SVM literature.

The content thus far, has critically evaluated the enduring problems for service improvement in health and social care and put forward that there are issues with using the most popular PDSA implementation framework to address service improvement. Hence, it is proposed, that exploring the impact on service improvement through implementing SVM may potentially be the way forward for effective and sustainable service delivery. This is because SVM, unlike PDSA, is explicit in trying to enable: the problems to be emergent from multiple stakeholder discussions; the solution(s) to be tested to be service user facing and inclusive. This is in order to find sustainable solutions to reduce the waste and deliver a service that benefits the service user, which is in line with the earlier mentioned quality improvement components.

1.5. Introduction to occupational therapy - a brief discussion

This section will provide an overview of occupational therapy in the UK. Occupational therapy is not a well-known therapy from the public perspective, its name gets confused as the therapy having a focus on work, which it can do, but that is not it's primary remit. Hence it was necessary to give some focus as to the therapy to clarify what is the discipline, starting with descriptions, a brief UK history of the profession and then to contemporary practice. Rather than engage fully with the seminal works that provided the historical philosophical and theoretical shifts of the dynamic evolution of the profession, the intention is to bring a broad overview introducing occupational therapy for wider consumption, to describe it, to briefly provide its history and currency, thereby foregrounding its relevance and contribution to inform the professional backdrop of this study. For example, a seminal author Wilcock (1999) was the first to try to articulate the broader sociopolitical context for occupational science and therapy. Due to Wilcock, occupational scientists, therapists and theorists are researching whether this has actually happened and if her ideas have made any difference to the form, function and purpose of occupational therapy and its social mandate, e.g., Pollard et al.'s (2008) book has explored this. For transparency, the PhD research student's background is that they have been part of the occupational therapy profession for over twenty-six years, currently they are in higher education as an associate professor, but prior to that in clinical as a specialist neuro occupational therapy practitioner. Hence their focus of interest for the research topic is on an occupational therapy setting.

1.5.1. What is occupational therapy?

Although occupational therapy started with creative activities, it evolved to widen its treatment modality to being everyday activities related to the person/group/ communities.

The World Federation of Occupational therapists' (WFOT) description of occupational therapy (WFOT 2012) is: "*Occupational therapy is a client-centred health profession concerned with promoting health and wellbeing through occupation. The primary goal of occupational therapy is to enable people to participate in the activities of everyday life. Occupational therapists achieve this*

outcome by working with people and communities to enhance their ability to engage in the occupations they want to, need to, or are expected to do, or by modifying the occupation or the environment to better support their occupational engagement". WFOT is an international association of professional bodies around the world (currently totalling 107 organisations, resulting in 633,000 occupational therapist members across the globe) and sets "*the standard for occupational therapy education internationally and promote excellence in research and practice*" (WFOT 2022a). WFOT has been a collaborating partner of the World Health Organisation (WHO) since 1959 and is officially recognised by the United Nations as a non-government organisation (NGO) since 1969 (WFOT 2022b). The Royal College of Occupational Therapists (RCOT), the UK membership body for occupational therapists, describes occupational therapy as (RCOT 2022b): "*Occupational therapy helps you live your best life at home, at work – and everywhere else. It's about being able to do the things you want and have to do. That could mean helping you overcome challenges learning at school, going to work, playing sport or simply doing the dishes. Everything is focused on your wellbeing and your ability to participate in activities. It's also a science-based, health and social care profession that's regulated by the Health and Care Professions Council*".

The PhD research student author of this thesis, usually at her workplace, describes occupational therapy, to the public in plain English for accessibility, as:

> *"Occupational therapy is the use of a person's, or community's, everyday meaningful activities (e.g., getting dressed, cooking, using keyboard on a laptop, using public transport), that is occupations, as a treatment modality to use to support the person's recovery, whether that be for physical, mental, or emotional health and wellbeing".*

Occupational therapy enables a person or groups to continue *performing in their everyday occupations*, through the therapy creating conditions for a dynamic balance between 3 factors, the person/group (*intrinsic factors*), the chosen meaningful activity/ies (*occupation/s*), and the environment/s where the occupation/s will take place (*extrinsic factors*), adjustment in anyone, or more, is to facilitate or enable the person/group performing the occupation (Cole and Tufano 2008). That the therapy is shifting the dynamic intersection of the person/group, occupation, and environment to change the performance or participation of the person in the chosen activity. For

example, taking an everyday activity such as brushing teeth, it could be used to improve recovery and wellbeing in many ways: to practice to improve ability to brush teeth and maintain dental hygiene [using everyday activity to improve everyday activity performance]; or to improve or maintain a person's hand dexterity and arm joints' range of movement [physical function]; or practice for the person with the sequential steps that lead to brushing teeth [cognitive ability]; or engaging a person in a small everyday selfcare activity to disrupt amotivation, as can happen with someone, e.g., diagnosed with clinical depression [mental and emotional health]. The end outcome of occupational therapy is not just improving performance in occupations, but overall, it is regarding wellbeing as this has a direct effect on a person's health and quality of life (Patten 2020). Although, the focus on everyday activities is not necessarily how occupational therapy started, as is discussed in 1.5.2.

1.5.2. A brief UK history of occupational therapy

The idea of using arts to improve mental health was introduced to the UK after the enlightenment in the 1800s, in the 19th century, known as the moral movement, by a Quaker William Tuke (Borthwick et al. 2001). Their treatment of mental health patients was to improve availability of services to better the person's quality of life. This was by having no more than 30 in their treatment houses, providing a dignified approach to people's care, enabling them (the patients) to use their hands to do some work, and applying the Quaker values which formed the principles of the moral movement (Borthwick et al. 2001, p.431):

> *"1 A concern for the human rights of people with severe and disabling mental health problems*
> *2 Personal respect for people with severe mental health problems*
> *3 An emphasis on the healing power of everyday relationships*
> *4 The importance of useful occupation*
> *5 Emphasis on the social and physical environment*
> *6 A common sense approach rather than reliance on technology or ideology*
> *7 A spiritual perspective*".

These principles formed the basis of historical occupational therapy, which are still applied in its current configuration (Wilcock 2002). Adolf Meyer is another influence

in the development of British occupational therapy, an American psychiatrist bringing forward in the 19th century the relationship of the value of work to transform psychiatric patients, and his writings have been said to be in line with Tuke's work (Wilcock 2002). Meyer put forward a holistic viewpoint of patients to create a better understanding of the person/group in context (Cole and Tufano 2005).

Occupational therapy came into being as a profession during war, circa 1907, regarding rehabilitating of injured veterans in Canada (Dunlop 1933). The first school was opened by Eleanor Slagle a social worker in the USA 1914 (Dunlop 1933). In 1925, the 1st female UK physician, Dr Elizabeth Casson, went to visit mental health hospitals that had occupational therapy (Owens 1955). Her enthusiasm for an alternative way of treatment for mental health patients came from her time spent at the house project in Paddington run by Octavia Hill, a reformatory social worker, where arts and creative activities were used to lift the mood of the residents of the house. In 1930 she set up the first occupational therapy school in Bristol, which moved to Oxford due to war, the well-known school, Dorset House (Owens 1955). Constance Owens became the principal head of the school, later she set up the Liverpool school of occupational therapy in 1947 (Wilcock 2002). She formed the Association of Occupational Therapists (AOT) 1936 (Tyldesley 2004) and instigated the development of WFOT which officially came into being in 1952 (Wilcock 2002). The occupational therapy profession was not initially recognised in the Professions Supplementary to Medicine Act (1960) in the UK (Nancarrow and Borthwick 2021). Though soon after the profession became regulated under the act and had a professions specific registration board under the Council for Professions Supplementary to Medicine, also known as CPSM in abbreviation, monitored professional conduct (Health and Care Professions Council (HCPC) 2012). In 1974, AOT and the Scottish Association of Occupational Therapists (SAOT) merged to become the British Association of Occupational Therapists (BAOT) and the British Journal of Occupational Therapy (BJOT) was launched (RCOT 2022c). The occupational therapists are governed by the Health Professions Order 2001 and regulated by the Health and Care Professions Council (HCPC) since 2002 (formerly known as CPSM) (HCPC 2020, 2016).

The eurocentrism of the epistemologies and knowledge base of occupational therapy and pedagogies for its education and training has recently been raised in the UK by Ahmed-Landeryou (2024, 2023), as creating a structural gatekeeping system keeping the representing numbers of Black and minoritised persons low in the profession. In the UK the representative numbers of Black and minoritised professionals in occupational therapy is 10% of the 41,321 registrants as recorded by the Health and Care Professions Council (HCPC) (2021), who are the regulatory body for 14 allied health professions. This is comparatively lower than the percentage of Black and minoritised individuals in the general population in the UK, 26.6% (18.4% England and Wales (GOV.UK 2022), 4.5% Scotland (Audit Scotland 2022), 3.7% N. Ireland (Statista 2011)). So, it may appear to the outside observer looking in that the profession's identity is constructed on whiteness, in that the term whiteness is referring to an ideology that elevates people racialised as white at the top of a racial hierarchy system, and normalises that white eurocentric culture, values, language, ways of being and expressing, defining what is professionalism and epistemology are at the apex of what it is to be civilised (Mathias et al. 2014). Knowing that a person's professional self- identity is formed from its dynamic interactions and relationships with the environment that a person is in, and the challenges that come with that (Nissen et al. 2022). Nancarrow and Borthwick (2021) further support this in explaining that allied health comes from a western centric neoliberal post-industrial and largely English speaking context, positioning itself as ethnocentric and homogenous in terms of its epistemologies and descriptions of what it is to be a professional. Nancarrow and Borthwick's (2021) book is informing of the development of the allied health professions from a sociological perspective, including exploring its eurocentrism; whereas Ahmed-Landeryou (2024, 2023) is challenging the profession in hopes to disrupt the status quo to change the representation terrain, and hence the white hegemony of the profession and its identity.

1.5.3. Contemporary UK occupational therapy

Occupational therapists are dual trained, for working in both physical and mental health settings, and they are uniquely trained in activity analysis, that is understanding the biopsychosocial components of activities to then be able to

synthesise the chosen activity with the person/group for credible use as treatment (Hersch et al. 2005). WFOT (2019) position statement situates occupational therapy with human rights and justice work, hence relating the profession to politics and pursuance of better lives for individuals and communities so that they can thrive in society, this relates back to the basic moral movement principles.

The profession is built predominantly on the educational philosophy of pragmatism, and from the 1930s to the 21st century there was a dominance of the biomedical and biomechanical frames of reference, which conflicted with the holistic stance as these frames of reference were based on reductionism, due to the established dominance of the medical model (Cole and Tufano 2005). As time went on, occupational therapy improved its services and presence in healthcare and pushed against the medical model.

In the UK contemporary occupational therapy has moved beyond traditional acute, rehabilitation, and social care services; occupational therapists can now be, for example: school-based working with children with learning disabilities helping the school to adjust their environment and routines to enable the child to get the best out of mainstream schooling; or based in GP services working with patients who are experiencing challenges with everyday living, so the therapist here assist with hospital admission avoidance; being part of organisations that work with homeless/unhoused groups, here they work on helping people to develop routines to help them manage everyday living, so that they start developing habits to help them in their new accommodation once allocated housing; and more recently working in critical care units regarding cognitive and delirium management, which very much increased due to COVID19 admissions; and many more areas. Occupational therapy professional models of practice moved to centre occupational performance and then to client centred models, with a push for demonstrating occupational therapy as scientific and making visible their informing evidence for practice (Cole and Tufano 2005) to protect their scope and domain of practice (Andersen and Reed 2017). In the late 1980s academics from the USA developed occupational science, which studies how humans 'do activity' and how context enables or constrains engagement

in activities; this science supported occupational therapy practice in how the discipline implemented activity/ies as a treatment modality (Yerxa et al. 1989).

The dominance of the medical model, medical language and medical profession did, and still does, affect the profession forming and establishing its professional identity (Walder et al. 2022, Turner and Knight 2015, Mason 2006). The push for occupational therapy to be seen as scientifically legimate has 'invisibilised' who, what and why of occupational therapy (Turner and Knight 2015, Mason 2006). As far back as the 1920s occupational therapists were contemplating their culture and how they fitted in to the medically dominant healthcare systems (Quiroga 1995).). Hence it could be posited that aligning with the medical model/profession was and is a strategy for the profession to gain recognisable status within health and social care and sustain the profession's relevancy. This is a problematic strategy as it does not help to differentiate, elucidate, and establish the difference between medically driven professions, e.g. physiotherapy and occupational therapy, which is medically informed but does not start from medical formulation. This could have the effect of muting the meaning and uniqueness of occupational therapists' professional identity and potentially threatening the sustainability of the profession. Hence, as occupational therapists, being able to describe what they do (differentiating themselves in role and responsibilities from other professions allied to health, e.g. physiotherapy or social work), and to use occupational therapy language in practice becomes fundamental to starting to establish their professional identity (Walder et al.2022, Turner and Knight 2015), and be visible.

As the profession is developing, and with this its professional identity, so too have its educational training pathways changed over the years in the UK. The training originally awarded a diploma in occupational therapy on completion, then in the 1990s BSc Hons and postgraduate degrees got approved by the professional body; there were fears that the degree award would make the occupational therapists over qualified and no-one would hire them, this did not transpire (Wilcock 2002). This thinking about the degree could be thought to have links to fragility of their belief in their professional identity and legitimacy as a profession due to the dominance of medical field and model (Abbott 1988), which may make them think they are 'not

worthy'. Last year the RCOT approved the Doctorate pathway in occupational therapy (RCOT 2022d). This researcher was part of the discussion and consultation process for the Doctorate pathway and raised with others, the possibility that the route could create more graduates who would be racialised as white due to inequity of access due to affordability. The answer that came back was to monitor the situation.

Now from the information of occupational therapy shared so far, let us return to the moral movement's principles and compare them to occupational therapy philosophy and practice for all settings:

1. Human rights – the WFOT's (2019) position statement places occupational therapy as working towards improving human rights and engaging in justice work.
2. Showing respect [and dignity] with patients/service users that occupational therapists work with, this is part of the requirements of the standards of proficiency (HCPC 2022c), demonstration of adherence to the standards is compulsory for occupational therapists to practice.
3 & 4. The power and importance of everyday relationships – In occupational therapy this is enacted through the therapeutic use of self, described as the "*planned use of his or her personality, insights, perceptions, and judgments as part of the therapeutic process*" (Punwar & Peloquin 2000, p. 285). So, the therapeutic use of self is the effort that a therapist puts in to maximize the relationship between patients/service users, enabling the latter can potentially get the optimal outcome/s from the therapy (Taylor et al. 2009, Fan and Taylor 2018).
5. Environment – this is key as a lever of change to improve or maintain a person's performance with an occupation (Thomas 2015)
6. A common sense approach – occupational therapy is built on pragmatism, using the everyday resources within the person's context to improve their recovery and wellbeing (Cole and Tufano 2005)
7. Spirituality is at the centre of the Canadian Model of Occupational

Performance and Engagement, where spirituality is about what motivates a person to be and to interact with the environment they inhabit (Cole and Tufano 2005).

Since 2007, RCOT have been trying to further establish the validity and status of the profession in health and social care through focussing on value for money studies and reports (i.e., cost effectiveness evaluation (Fox-Rusby and Cairns 2005)), e.g.:

Draper (2008) Occupational therapy is cost-effective for older people with dementia and their caregivers;

Sampson et al. (2014), Economic evaluation and home visits;

RCOT (2017b) Relieving the pressure on social care;

RCOT (2017c) Improving lives, saving money.

The current administration of RCOT is now focussed on a "*new strategy, values and brand to support the vision that one day people everywhere value the life-changing power of occupational therapy*" (RCOT 2022c).

1.6. Occupational therapy and service improvement

Occupational therapy is a service which reflects well a complex adaptive system of health and social care provision and spans both. Occupational therapy started in mental health in the UK in 1920's, and soon established itself across mental and physical health working with veterans in rehabilitation during the world wars (Wilcock 2001). Today occupational therapy can be found across acute, community and school settings, mental and physical health, learning disabilities and non-traditional settings, working with all age ranges (RCOT 2018a). The profession is unique because as a treatment approach its differentiating end goal is to return people to everyday living through the implementation of activity-based intervention(s) (Creek and Lawson-Porter 2007, RCOT 2018a). Its models of practice demonstrate that the concepts of occupational therapy include systems theory in understanding and describing an individual as a dynamically integrated occupational being, which has led to defining occupational therapy as a complex intervention (Creek 2003, Cole and Tufano 2008, Pentland et al. 2018). Complex interventions are not the same as complex adaptive systems, the former is concerning a treatment approach, and the

latter is about organisational structures and behaviours to deliver the work (Duncan et al. 2007).

Occupational therapy provision is not about life and death but delivers occupation-based rehabilitation for improving health, wellbeing, and quality of life in getting on with everyday living. However, as with all services in the NHS and social care, if occupational therapy services are to be sustainable and retain funding it also must engage in demonstrating service effectiveness and efficiency. Considering the ongoing funding and workforce constraints (Charles et al. 2019), the RCOT's campaign 'Improving lives, saving money' (RCOT 2018b), is calling its members to demonstrate to all stakeholders that they are delivering effective and efficient services, in order to continue being funded and gain more presence and opportunities. Therefore, service improvement is a real-world problem for occupational therapy services. A further challenge to occupational therapy funding is that because it is usually in rehabilitation settings (RCOT 2018a), it is competing with the dominant focus of service improvement being more towards hospital, acute (e.g. emergency department) and diagnostic services (e.g. cancer care) (NHS England 2017). This could be why occupational therapy does not feature explicitly in most policy or funding documents regarding service improvements.

The general issues raised by the outgoing chief executive of the King's Fund, Professor Chris Ham (2014) about service improvement, such as, current methods failing to keep up with delivering effective health and social care services, due to the speed, complexity, and uncertainty of changes in organisations, will also affect occupational therapy services. There is very limited published literature about how occupational therapy evaluates service provision or improvements, e.g., Millar et al. 2013, O'Reilly 2016, Davies and Smith 2018. In general, the service level issues identified in these cases appear to focus predominantly on timeliness, waiting times, admission stopping, cost savings and service user experience. The limited published literature may also be due to how occupational therapists work and where they work. Occupational therapy teams usually are part of multidisciplinary teams within a service/specialist services, for example the SVM case story that discussed an adult social care service delivery, it had a passing mention that there is an occupational

therapy team within the service (O'Donovan 2011). Or sometimes there is a lone occupational therapist within a team, so the focus is more on the service as a whole, rather than the input/impact of the occupational therapist on the service performance.

The discussions have set up that occupation therapy provides a good case for examining service improvement through the lens of a systems thinking approach framework, specifically SVM. This is important to ensure that occupational therapy service provision demonstrates effectiveness and efficiency to validate continued funding.

1.7. Chapter 1 conclusion

Occupational therapy in the UK is a consistent feature in health and social care and has developed since its beginning in mental health in the early 20th century. Currently in the UK, occupational therapists are working in NHS, community, local authority, social care, private practices, and charity sectors, in mental health and physical settings, with patients/service users across all age ranges from neonates to the elderly (RCOT 2022b). The focus on demonstrating efficiency in occupational service provision as a way to provide validity of occupational therapy existence in health and social care (RCOT 2017c) could be trying to run before being able to walk. That is without data and research on service effectiveness, that is meeting the demands of the service from service users' perspectives, the cost data and efficiency analysis cannot be corroborated (Fox-Rusby and Cairns 2005), it will be numbers without efficiency meaning, i.e., that resources have been optimally distributed for the service to be effective. So, what is needed is evidence on service delivery effectiveness through published service improvement projects and studies.

1.7.1. Aim of Study

The aim of the study is to examine the impact of implementing Seddon's Vanguard Method (SVM) on service level outcomes of an occupational therapy service in the United Kingdom (UK). The proposal is underpinned by background information and a scoping literature review. Research regarding humans, i.e., studying service improvement, are in the realms of postpositivism, in that reality cannot be fully

objectively measured and the research is influenced by the researcher choices regarding the research context and process, as well as their values (Ryan 2019). This will work well with the systems thinking approach, SVM, for service improvement that this study will take and collect mixed data to understand and analyse the service, to the plan and implement change.

Chapter 2 Scoping Literature Review

Note: this scoping review was published in a peer reviewed publication:
Ahmed-Landeryou, M.J. (2022). Using Seddon's Vanguard Method for service improvement in health and social care: a scoping literature review. *British Journal of Healthcare Management* 28(6) DOI: https://doi.org/10.12968/bjhc.2021.0040 [published online 10 June 2022]

2.1. Introduction

A scoping literature review was undertaken to initially map the evidence that is available and of what form it takes, in relation to the given question directing the literature search, and also assist to establish a gap in the research (Joanna Briggs Institute 2020). This literature review approach is taken as the evidence available is unclear in relation to SVM and occupational therapy and there appears to be no literature review undertaken on this topic.

Scoping reviews are high level evidence synthesis and useful to apply to: i) identify the width of available literature and, ii) summarise the evidence and identify the gap/s in research (Peters et al. 2020). Peters et al. (2020) advise there is no need to critically appraise the literature as it is a precursor to a systematic literature review. The review took a systematic approach to the literature search. The data will be synthesised as guided by Pope et al. (2007), in that the synthesis will summarise and explain the mixed data using text.

2.2. Scoping review process

The interest of the PhD student is implementing SVM for occupational therapy service improvement. However, the literature search on SVM and occupational therapy service improvement, only revealed one directly relevant source. Hence, the literature search was widened out to health and social care services in the UK public sector where occupational therapists may potentially be a part of the service/team (as guided by RCOT (2018a)), even if the paper did not directly state this. For example, NHS, community/social services (not benefits/housing lets), housing (not repairs/lets) and GP services.

The scoping review protocol applied is the one from Joanna Briggs Institute (Peters et al. 2020)

2.2.1. Aim of scoping literature review

The aim of the scoping review was to provide an overview of the breadth of available evidence of Seddon's Vanguard Method, a service improvement intervention, when applied to occupational therapy services, and evaluate the service level outcomes from applying this service improvement intervention.

2.2.2 Objectives of the scoping literature review

The objectives identified were developed using the Joanna Briggs guidance regarding scoping review objectives (Peters et al. 2020) and adapted for the subject matter of the research.

-To identify the types of literature available regarding the application of SVM to health and social care services.

-To identify service changes and outcomes from the literature that have applied SVM to health and social care services.

-To identify a gap/s in the research literature regarding SVM to health and social care services.

2.2.3. Review question

The question is based on the discussions from chapter 1 on service improvement, SVM and occupational therapy. As it is unclear what types of literature are available and what are the outcomes that occur when SVM is applied in a health or social care service. The question is formed taking a population (p), exposure (e), outcome (o) approach.

p= health and social care services

e= SVM

o= service improvement changes or outcomes

Implementing Seddon's Vanguard Method to health or social care services in the UK, which literature source can it be found in and what service improvement changes or outcomes occur?

2.2.4. Inclusion criteria for the search

The inclusion criteria are the elements in the papers that must be present for them to be included in the literature review.

-John Seddon's Vanguard Method applied to improve service delivery,

-Peer reviewed publication,

-Grey literature,

-Full text in English available,

-Health or social/community care or local authority organisation/services,

-UK organisation (national and local politics and policies of health and social care in public sector organisations are country context and hence an international inclusion of literature may not reflect the practices specifically in the case of the UK),

-Any publications from 2004 onwards, after the publication of John Seddon's seminal book in 2003.

2.2.5. Exclusion criteria for the search

The criteria elements that exclude the papers from being part of the literature review.

-Organisations/services that are related to benefits (not an occupational therapy service), housing (lettings or repairs as these are not part of health and social care occupational therapy practitioners' roles and responsibilities), ICT (information and computer technology), higher education, clinical intervention only, call centre (not an occupational therapy service);

-Organisations/services that are not public sector, not joint working with public sector, external agency or external agency contracted by public sector;

- Vanguard New Models of Care (NHS England 2016), an initiative to discover blueprints for integrated service delivery that was rolled out from 2015, related sustainability and transformation partnerships (STPs);

-European and international organisation or service as research is for England;

-No English translation available;

-Full text not available;

-Editorials, and commentaries.

2.2.6. Summary of search terms

It is important to be explicit in showing the search terms to enable others to follow and repeat the process. The terms chosen and relevant for the health or social care settings and the particular service improvement intervention chosen.

"Vanguard Method" – "public sector" – "social care" – "social service" – healthcare – NHS – hospital – local authority – ward – clinic – nurs* – doctor – "general practitioner" – therapy – therap*

The term "Vanguard Method" on its own, and then paired with another term with the Boolean operator AND. This pairing approach was repeated for the other terms separately with the term "Vanguard Method". Duplicates were removed at the end of searching.

2.2.7. Databases searched

Article searches on EBSCOHost as it holds a large number of healthcare, social care, education, and business databases. Additionally, searches were carried out on google, google scholar, researchgate and ETHOS, for books, reports, masters' dissertations, doctoral theses.

Figure 2.1. summarises the literature identified through the searching process and applying the parameters, leading to eventually identifying the seven papers for analysis.

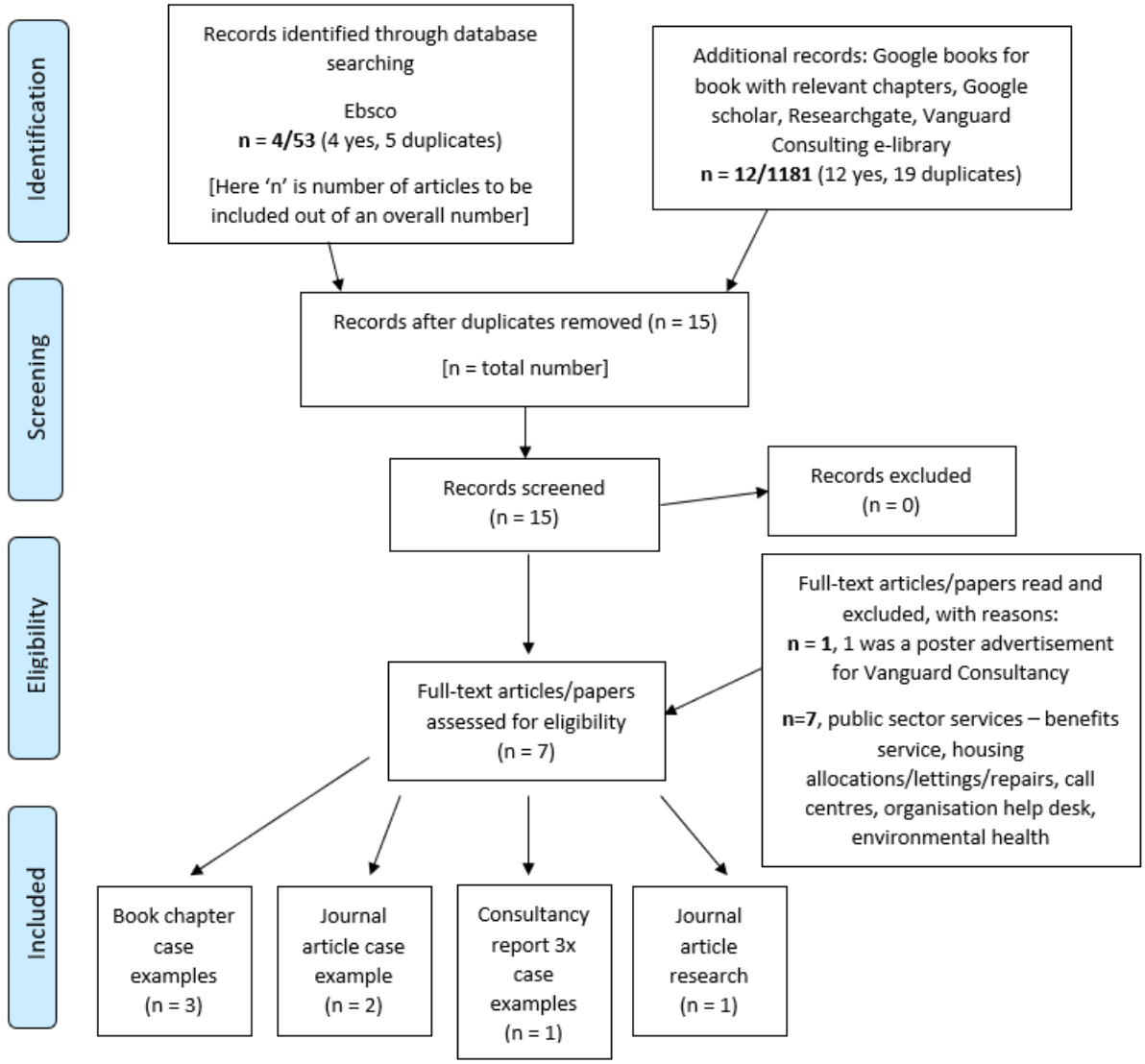


Figure 2.1. Adapted PRISMA chart of papers identified for scoping review (Page et al. 2020)

2.2.6. Extracting data

A summary of the papers identified for the scoping review is collated in a table (Table 2.1). The data were thematically analysed applying the guidance from Pope et al. (2007). The service improvement outcomes were identified by reading line by line the results section and, highlighting and then extracting the relevant data to place on to an excel spreadsheet.

Table 2.1. Summary of papers for analysis for scoping literature review

Author	Type of literature	Setting	Research yes or no	Purpose	Findings/Outcomes
Allder S., pages 135-147 cited in Pell (2012)	Book chapter	Plymouth hospitals trust, specialist stroke units	No, service report	Showcase a service implementing the Vanguard Method	Carer satisfaction improved, Timeliness in referral to stroke unit improve. Timeliness of tests improved. Reduction in beds required. Cost savings.
Anderson A., Parkyn F. pages 93-112 cited in Pell (2012)	Book chapter	NHS Somerset and Somerset county council integration, reablement service	No, service report	Showcase a service implementing the Vanguard Method	New purpose identified for the service. The qualitative evaluation from patients, staff & clinicians very positive. Efficiency improvements seen through reduction in hospital stay, package of care and reduce carer strain and; prevention in hospital admissions, package of care, equipment provision and, admission to care home. Additional initial cost of social care during reablement period can be offset by reduced need following reablement. Redesigned reablement team had better outcomes.
Gibson J., and O'Donovan B., (2014)	Journal article	Children's social services in England & Wales, doesn't identify how many	No, service report	Showcase a service implementing the Vanguard Method	New purpose identified for the service. Reduction in wasteful activity, that is work that did not meet the needs of the child/family. New measures in terms of impact & improvement for

					the child/family. Increased the capacity of social workers to work face to face with child/family & managers not preoccupied with managing costs.
Jaaron A.A.M., Backhouse C.J., (2017)	Journal article (research)	Two case studies conducted, only relevant adult social care services in the UK (north Wales) focused on post SVM implementation	Yes	Investigates the impact of applying the Vanguard Method, in order to activate ''double-loop'' learning in service organisations	The results show a high level of organisational learning capabilities at both sites.
Hood, R., O'Donovan, B., Gibson, J., Brady, D. (2020) [added after literature review search re-applied 2022)	Journal article	NHS general practice, local authority adult social care, Social care: rights & welfare support-voluntary housing advice-tenancy support service-business transformation	No, service report	Discussion piece to showcase the Vanguard method	For effective people centred services, the service has to be designed how the work works effectively, addressing the question who's interest are being served by the service delivery to be able to be adaptable to service user demands.
O'Donovan, B., Pages 40-66 cited in Zokaei et al (2011)	Book chapter	English local authority adult social care	No, service report	Showcase a service implementing the Vanguard Method	New purpose identified for the service. Early evidence shows low cost early provision was preventing later higher cost provision. New customer driven measure identified: right

					first time. Increase in first time right cases. End to end time reduced. Reduction in cost per case and administrations costs.
Zokaei et al., (2010)	Consultancy report	Cases from 3 council services: A – Neath Port Talbot County Borough Council (DFG Occupational Therapy) B – Blaenau Gwent County Borough Council (Housing/Council Tax Benefits) C – Portsmouth City Council (housing management service)	No, service report	Showcase three services implementing the Vanguard Method	New purpose identified for all the services. Reduction in end to end time of the service process. Improvement in work capacity. Reduction in preventable failure/wasteful activity because getting the work right first time. Reduction in work backlog. Cost savings.

2.3. Results from scoping literature review

2.3.1. Types of literature

Three out of the seven identified literature are book chapters (O'Donovan 2011, Allder 2012, Anderson and Parkyn 2012), two journal articles (Gibson and O'Donovan 2014, Hood et al. 2020) and one a consultancy report (Zokaei et al. 2010) that showcased cases applying SVM and the resultant outcomes. One paper was research exploring evaluating how two services were operationalising double-loop learning post SVM implementation, not focusing on the implementation of SVM (Jaaron and Backhouse 2017).

2.3.2. Scoping literature review findings and analysis

The scoping literature review identified 2 main themes (figure 2.2.) from the data that answered the research question. The themes were identified using the synthesis method as suggested by Pope et al. (2007). Data were gathered from the results of each paper, or the discussion contents if the results were not in a clearly defined section. The relevant contents were read line by line to identify the data that answered the research question. The identified service level outcomes were either, cut and pasted or copied verbatim into an excel spread sheet (see Appendix 1). The excel spread sheet (see Appendix 1) collated data allowed for thematic and content analysis (Pope et al. 2007). From the data answering the research question, groupings were made due to similar service level outcomes and described by sub themes (x7), the sub themes were then colour coded to identify similarities, and then categorised into 2 identified main themes (summary in figure 2.2.).

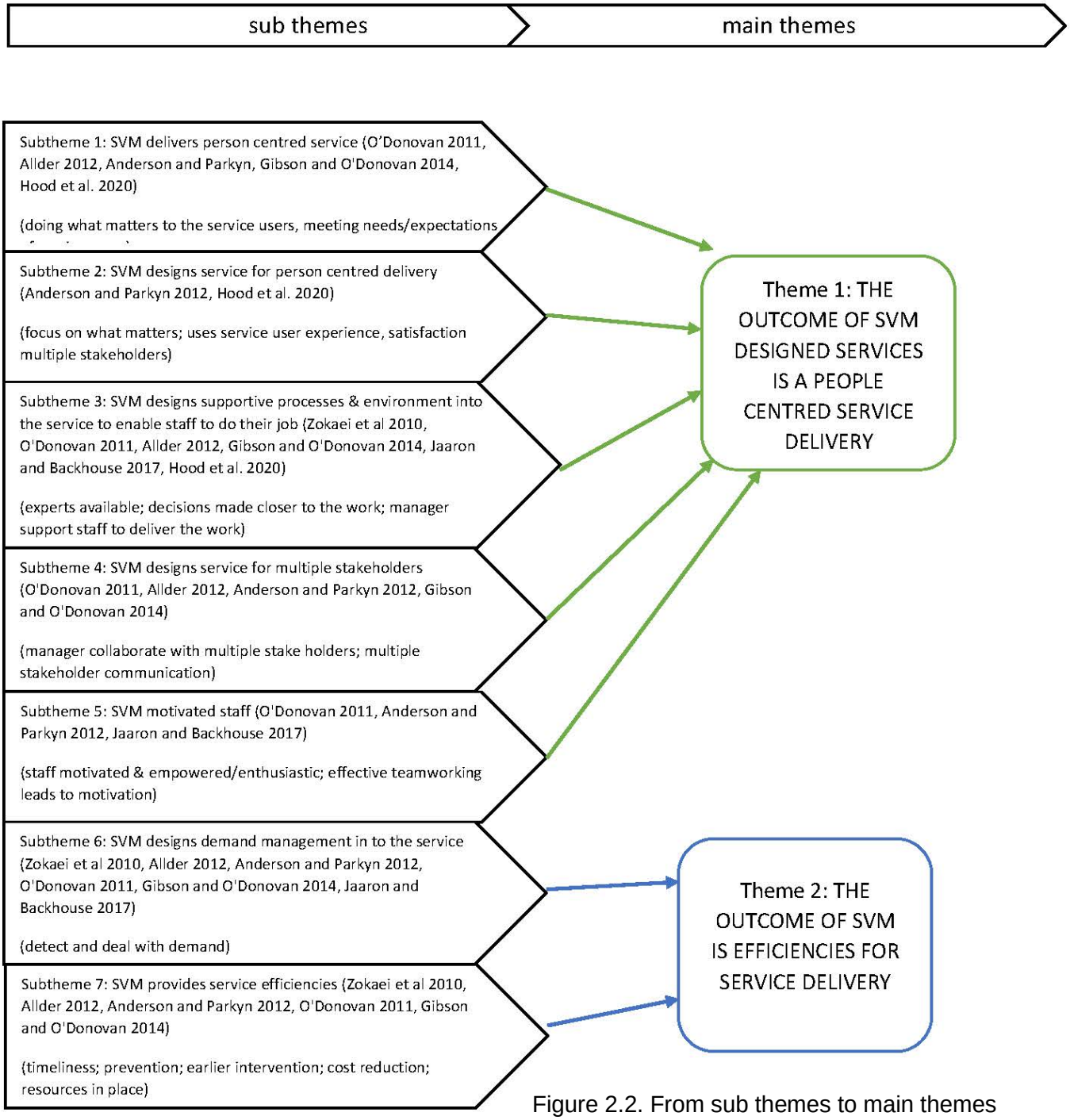


Figure 2.2. From sub themes to main themes from scoping literature review

2.3.3. Discussions of findings from scoping literature review

This section is organised around the discussions of the 2 main themes as identified in Figure 2.2. and in Appendix 1.

The authors of the papers included in the literature review are identified in Table 2.1.

2.3.3.1. Discussion of Main Themes

Two main themes emerged from the data and are discussed below.

Theme 1 - SVM designed services lead to people centred service delivery

The scoping literature review identified that implementing SVM for service improvement led to organising the service to deliver a people centred service. A key point from this is that for service improvement to be effective, it not only addresses the needs of the service users and their carers but also, the employees delivering the service. This is a novel interpretation of the term people centred services.

A summary of sub themes 1, 2, 3, 4, 5 (see figure 2.2) are presented next and refers to SVM service level outcomes for different stakeholders:

i) meet needs of multiple stakeholders (O'Donovan 2011, Allder 2012, Anderson and Parkyn 2012, Gibson and O'Donovan 2014)
ii) personalisation of services (Gibson and O'Donovan 2014, Hood et al. 2020)
iii) satisfaction of multiple stakeholders & positive feedback from multiple stakeholders (Anderson and Parkyn 2012)
iv) support, processes, and measures in place for staff to do their job effectively (Zokaei et al 2010, O'Donovan 2011, Allder 2012, Gibson and O'Donovan 2014, Jaaron and Backhouse 2017, Hood et al. 2020)
v) motivation (staff) (O'Donovan 2011, Anderson and Parkyn 2012, Jaaron and Backhouse 2017).

Summary of sub themes items i) to v) are related to people centred service delivery, as it is not only for the service users and their significant others, but also the employees delivering the service. Seddon (2003, 2005, 2008) proposes that a successful service works for the service users because: a) the service is designed around the service users demands and, b) the frontline employees are supported to be able to meet these through, e.g., supporting autonomous practice, resources, time, processes and, access to experts.

The aforementioned item i), is related to person centred service delivery, this is referred to in item ii) as personalisation of services. Person centred service delivery has become synonymous with quality service delivery in health and social care (Waters and Buchanan 2017), the principles of person-centred practice are described as:

"*1. Affording people dignity, compassion and respect.*

2. Offering coordinated care, support or treatment.

3. Offering personalised care, support or treatment.

4. Supporting people to recognise and develop their own strengths and abilities to enable them to live an independent and fulfilling life"

(The Health Foundation 2016, p.6).

Person-centred delivery as an outcome of SVM is illustrated in the papers by O'Donovan (2011), Allder (2012), Anderson and Parkyn (2012), Gibson and O'Donovan (2014), Hood et al. (2020), through meeting needs and focussing on what matters for service users and carers. This relates to person centred principles 1 and 3 as described by the Health Foundation (2016). The person-centred delivery outcome was further supported by item iii), satisfaction and positive feedback from multiple stakeholders, ergo service users (Anderson and Parkyn 2012). However, this paper did not explicitly identify the changes or differences, from comparing before and after the SVM implementation. This constrains the validity of the outcome of findings, as it is unclear if after the implementation there was a comparative change (Coghlan and Brannick 2009). Item iv), is related to two of the person-centred principles: no. 2, coordination of care and; no. 4, enabling people to live a quality of life. Also no. 4 can be said to relate to the core principles of occupational therapy practice (RCOT 2018a). Delivering person centred services can also be conceptualised as a wicked problem, as it is known to be a complex process. Riding et al. (2017) suggests that one of the challenges of delivering person centred care is being able to take into account its complexity. It could therefore be argued, in light of the review findings, that SVM may have advantage when delivering person centred and people centred services, as it offers a service improvement implementation framework that may work within complexity.

Items i) to v) could be viewed as related to solving the problems that could arise from the characteristics of a wicked problem and, fit well with outcomes from applying systems thinking approach. For example, there is multiple stakeholder consideration, there is end user focus, the processes and measures driving the system behaviour are addressed and the solutions concern meeting multiple stakeholders needs (Rittel and Webber 1973, Reynolds and Holwell 2010).

Items iv) and v) have a staff focus to enable people centred service delivery. Nayar (2010) asserts that service improvement cannot happen if the issues for the employees are not addressed. He further suggests that lack of redress to employee issues may lead to: low morale and motivation, loss of staff and, limited impact of the change implemented. Nayar's findings resonate with Pink's (2009) conclusions on staff motivation in the workplace, which found that three factors motivated staff to be engaged in commitment and bettering the service: purpose (knowing and understanding this for the service), mastery (availability and accessibility of resources to improve skills), autonomy (independence to make decisions about the work). For both Nayar (2010) and Pink (2009) a recurring theme in various services and organisations they evaluated was that when staff are not part of the decision making during the change process, they do not feel invested in service improvement. That is, they do not see the purpose or the benefit of the changes. Some of this is mirrored in the findings in the Check phase of the 5 papers implementing SVM.

However, the outcome of staff motivation from SVM was not compared before and after SVM implementation (O'Donovan 2011, Anderson and Parkyn 2012, Jaaron and Backhouse 2017). Hence, it is unclear whether the staff in the services had low or already high motivation before SVM implementation. This may be due to the O'Donovan (2011) and Anderson and Parkyn (2012) publications being case reports, not research and, Jaaron and Backhouse's (2017) research focus was post SVM implementation. Therefore, there is limited validity of the findings to support that the implementation of SVM had a contribution to the end measure/outcome of staff motivation.

Building people centred services is part of UK policy for delivering sustainable health and social care services that works for the benefit of the service users and employees (The Health Foundation 2016, Nuffield Trust 2019b). As the Nuffield Trust (2018c) states, it is not enough to put more money into services, as this will only lead to the services just about managing. What is needed is a revision of the staff mix and how they work to deliver a changed way in how to help the public manage themselves. Hence, from this scoping review a novel interpretation of the term people centred services is put forward, services that meet the demands of service users, and to enable organisations to do this, they must also meet the needs of the staff delivering the services.

This section has put forward that for complex adaptive systems, such as health and social care services, it is suggested that change solutions require multiple stakeholder engagement. Ownership by all stakeholders to commit to make the change work has been shown to be a potential key factor in finding effective change solutions.

Theme 2 - SVM leads to efficiencies for service delivery

This theme suggests that SVM not only leads to effectiveness (fulfilling what you set out to deliver) but efficiencies too (fulfilling service purpose with the least possible waste of time, effort and resources) for service improvement**.**

The following 4 items present a summary of sub themes 5 and 6 (see figure 2.2.), which refer to the outcome of SVM at service level in relation to efficiencies:

i) the reduction or removal of wasteful actions and activities (Zokaei et al 2010, Allder 2012, Anderson and Parkyn 2012, O'Donovan 2011, Gibson and O'Donovan 2014, Jaaron and Backhouse 2017),

ii) the saving or reducing of costs (Zokaei et al 2010, Anderson and Parkyn 2012, Gibson and O'Donovan 2014, Hood et al. 2020),

iii) the reduction of service user drop out (Zokaei et al 2010),

iv) the delivering of a timely service (Allder 2012, Anderson and Parkyn 2012, O'Donovan 2011, Gibson and O'Donovan 2014).

The aforementioned items, i) to iv), suggest that efficiency outcomes are related to both staff and service users. The scoping literature review reveals that the efficiencies concerned:
- getting the work processes right so that the money was used optimally;
- making sure the service user needs were met correctly first time, as not doing this may potentially lead to additional costs to the service later on, due to:- the deterioration of the service user because the needs were not met earlier or; service users keep on returning as needs keep being unmet;
- reducing unnecessarily lengthy and or complicated processes creating several stop-starts in the service user journey.
These efficiencies relate to those sought after in health and social care services regarding: costs (e.g. procurement, agency staff), timeliness (e.g. early intervention, waiting lists) and wasteful activities (e.g. stop-starts, duplication) (Maguire 2019).

There may be potential for SVM to deliver service improvement in terms of value for money (VfM). VfM is an economic term that evaluates whether the service is optimally using and distributing its resources in terms of cost per output (measuring efficiency) (Fox-Rusby & Cairns 2005, Drummond et al. 2015). Hence, there is potential that SVM could ensure that the investment of money into time and resources is representative of a good value service in meeting service user needs. However, this would need to be explored further. Given the findings under this main theme, SVM may be an effective approach to address the current efficiencies sought in health and social care.

2.3.4. Overall implications from the scoping literature review

In summary, SVM has been shown to have the potential to deliver service improvement in general due to the way it works with complex adaptive systems. It has the potential to impact service delivery in occupational therapy, in terms of improving both people centred service delivery and some efficiency gains. However, this has to be taken with some reservation in light of the validity issues raised.

Importantly, the literature review has presented a critical understanding of the type of service level outcomes that could be impacted through the implementation of SVM, including the need to address relationships to people, processes, actions, and cost.

2.3.4.1. Implications for practice

There is continuing discussions about how to enhance the workplace in order to gain the best out of the staff for the benefit of service users (Biron et al. 2014, Ham and Murray 2015, West 2016, Blake 2017, Charles et al. 2019). This literature review provides support to the current directions these discussions are taking. For example, the findings suggest that service level outcomes from the implementation of SVM may enable the workplace to work better for employees and service users; enabling and empowering staff to deliver a service user centric service. However, the strength of the findings is constrained by:

-the limited literature found in relation to SVM and service improvement in occupational therapy and;

- Six of the 7 papers did not implement SVM under research conditions.

The scoping literature review offers two incentives for practice improvement. Firstly, the findings add to the evidence base concerning how the implementation of SVM may impact the improvement and effectiveness of services in health and social care, potentially in occupational therapy. Secondly, the findings will advance the knowledge base and evidence regarding occupational therapy service improvement.

2.3.4.2. Implications for research

The findings from the scoping literature review provide some justification for exploring the use of SVM as a method to bring about the delivery of sustainable change and impactful outcomes. However, there is grey literature and citation bias (Booth et al. 2012) due to, respectively: 3/7 papers in the literature review being reports in book chapters and 1 other paper being a report by a consultancy company, and; generally, SVM publications are dominated by authorship or co-authorship of Seddon and his company consultants. Hence, future research needs to be independent of Seddon and his consultants and, be published in peer reviewed

journals to reduce the biases mentioned. Another consideration is that any future research should collect data before and after, to ensure validity of outcomes found.

Research into the application of SVM may be particularly well suited to the exploration of the complexity of the delivery of people centred occupational therapy services. Thus, addressing the wicked problem of service improvement in context. Furthermore, the use of SVM as a potential method to explore and address the challenges of complex service change, implementation, and outcomes, offers an opportunity to explore its robustness and credibility (Herr and Anderson 2015).

2.3.5. The research gap

The scoping literature review reveals several gaps in research in this area.

►There is very limited research evidence of SVM and service improvement in health and social care, especially for occupational therapy services. The scoping literature review identified only one case report from a consultancy firm (Zokaei et al. 2010) which applied SVM to an occupational therapy, disabilities facilities grants (DFG), service. This very limited literature in the implementation of SVM for service improvement in occupational therapy is understandable for two key reasons:

i) Currently, most services in health and social care take an interprofessional approach to service delivery (Ham 2014, Ham and Murray 2015), hence it may be less likely for a single profession's service delivery problems to be investigated;

ii) The focus of occupational therapy research mostly concerns interventions, or the impact of treatment approaches to further establish its profession and its presence in health and social care (Creek and Lawson-Porter 2007). This is further supported by the National Institute for Health and Care Excellence (NICE 2019) repository of current evidence for health and social care where, if the search term 'occupational therapy' is used, the focus remains on interventions and treatments. RCOT (2019a) states that there has not been a major review of its research and development needs since 2007, and hence they have recently launched one to take place over 18-24 months. They acknowledge although there has been a substantial growth in occupational therapy clinical research in the last 20 years, they need to

encourage occupational therapists to engage in service delivery research that will relate to cost effectiveness, population health and wellbeing and influence policy and government (RCOT 2019a). Furthermore, some of this is captured in the top 10 research priorities for research by RCOT (2020), numbers 2 & 3 being about person & family centred and number 10 being about cost effectiveness. Only 4 service improvement publications were identified; Millar et al. (2013), O'Reilly (2016), Davies and Smith (2018), and Ige and Hunt (2022). The RCOT (2017a) 'Living not Existing' campaign promotes occupational therapists to get involved with service delivery as part of the government sustainability and transformation plans. The campaign needs to develop into research of occupational therapy service delivery and improvement;

►Occupational therapy services, face similar challenges to other services in demonstrating service improvement within complexity. That is, in selecting and applying a service improvement implementation framework that sufficiently works within the wicked problem frame, from which effective and sustainable solutions can be found. This challenge is further constrained by the limited literature to refer to for guidance;

►The research studies undertaken on individual services represented in the scoping literature review do not measure multiple stakeholder views before and after implementation for analysis and comparison. Multiple stakeholder views are one of the characteristics of a wicked problem, as identified by Rittel and Webber (1973).

►A well-used measure of service effectiveness is service user satisfaction (La Vela et al. 2014). However, the papers reviewed that included service user satisfaction did not demonstrate before and after implementation comparison or analysis. Using service user satisfaction as an indication of service effectiveness has had some criticism in literature (Gill and White 2009, La Vela et al. 2014). The concept of service user satisfaction has several challenges: it is complex, ambiguous and multidimensional; it lacks a common definition, and it has multiple terms (e.g., satisfaction, preference, views, engagement) and, therefore, trying to measure it is challenging (La Vela et al. 2014). The instruments that collect the data are known to have a weak theoretical basis, with low reliability and uncertain validity (Gill and White 2009). Hence measuring service user satisfaction may be better accomplished

using mixed data collecting methods (La Vela et al. 2014). A mixed data set may address the problems identified by: working towards a clearly defined purpose which may reduce ambiguity and the impact of low reliability and validity of instruments on findings; enabling breadth and depth of data capture that may represent the complexity of service user satisfaction and; potentially demonstrating its multidimensional nature through more than one data platform, potentially enabling a more rounded data set to be gathered (La Vela et al. 2014).

►Staff motivation can be an indicator of service effectiveness (Manzoor 2011). However, the literature review indicates that the papers that included staff motivation did not have before and after implementation comparison or analysis. Measures of staff motivation may have the same theoretical and psychometric problems as those facing service user satisfaction data collection. Hence, it may also be advisable to use mixed data collection methods for staff motivation data (Jaaron and Backhouse 2017).

►Findings in the scoping literature review reported efficiencies due to implementation of SVM (Figure 2.2). As mentioned earlier, it may be useful to evaluate these efficiencies in terms of value for money (VfM). Seddon (2003, 2005, 2008) asserts that the focus of SVM implementation is not efficiency, especially in terms of cost, but service effectiveness. However, the findings of the literature review indicate that a potential consequence of SVM implementation is that efficiencies could be related to costs (see section 3.2.1.2.). An economic evaluation analysis, such as cost effectiveness, could calculate whether the implementation of SVM for service improvement provides VfM (Fox- Rusby and Cairns 2005, Drummond et al. 2015, Smith et al. 2018). This would offer a unique perspective on service improvement in occupational therapy as none of the papers in the scoping literature review have included this aspect. Regarding occupational therapy literature and economic evaluation, a systematic review by Green and Lambert (2017), identified 3 UK publications including economic evaluations of occupational therapy services, out of the overall 9 identified. This lack of published evidence further adds to the need for economic evaluation analysis of occupational therapy services.

2.4. Proposed research aim, question and objectives developed from research gap in scoping literature review

2.4.1. Research aim

To explore and evaluate the impact of implementing Seddon's Vanguard Method (SVM), a service improvement framework, on service level outcomes of an occupational therapy service in England.

The aim and research question has been developed with reference to the PICO framework (Aveyard et al. 2016): Population = occupational therapy service, Intervention = SVM, Comparator = before during and after one year, Outcome(s) = service level outcomes and cost effectiveness.

2.4.2. Research question

After the findings of the scoping literature review, the research question was adapted to relate better to the gaps in research.

How and why are service level outcomes impacted, after implementing Seddon's Vanguard Method, a service improvement framework, to an occupational therapy service in England?

2.4.3. Research objectives

i) To identify how and which service level outcomes are impacted by implementation of SVM, before, and 6 months after the implementation of SVM;
ii) To explore the experiences and views of staff before, during and 6 months after the implementation of SVM;
iii) To explore service user experiences of the service, before, and 6 months after the implementation of SVM;
iv) To calculate cost effectiveness (cost of occupational therapy per service user), only if service level outcomes impacted identify costs, before and 6 months after implementation of SVM.

2.5. Chapter 2 conclusion

The findings from this scoping literature review add to the body of evidence concerning the implementation of Seddon's Vanguard Method and service improvement outcomes in health and social care. Secondly, the findings will add to the general body of knowledge of service improvement in health and social care. There is potential that Seddon's Vanguard Method, a service improvement framework, could design prepared and resilient services responsive to changing demands both from service users and staff contexts. This includes the need to address interrelationships of people, processes, actions, and cost, during the service improvement process. The scoping literature review indicates that there are gaps in the research exploring the impact of implementing SVM within an occupational therapy service, in terms of service level outcomes, staff and service user experience, motivation of staff, service user satisfaction and cost effectiveness. Engaging in research to address these gaps will potentially enable occupational therapy to demonstrate to commissioners that within the constraints of funding, services can still deliver sustainability through effectiveness and efficiency.

Chapter 3. Methodology

3.1. Introduction

For context the research timeframe includes the period of COVID19 strategies, the lockdown occurred, January 2020 to March 2021 (https://www.instituteforgovernment.org.uk/sites/default/files/timeline-lockdown-web.pdf). Even though the locked down period finished March 2021, for the public sector there was continuing work with COVID19 patients/service users, so the stress on their services had not ended. This chapter will begin by discussing the philosophical positions taken by this research, critical realism as the ontological position and pragmatism as the epistemological position, in relation to the aim, question and objectives of the research. This will be followed by an explanation of the rationale for selecting a single case study methodology (methodology is the approach taken for an inquiry to underpin how the research is systematically designed (Clough and Nutbrown 2012)). The methodology is based on the research question. Then the ethics application will be discussed as ethics is determined by the methodology choice, with reference to balancing risks and benefits; next data collection is discussed as this can only happen within an ethical framework, which will include recruitment; and only after data collection can data analysis be discussed. Finally, bias is discussed, which will include the role of reflexivity and rigour, and will provide an overview of the limitations of the methodology.

3.1.1. Research question, aim and objectives

This section is included to explain how the methodology is based on the research question. The outcomes from the scoping literature review, described in chapter 2, led to the development of the research question, aim and objectives. These were based on the identified gap in the current literature that there are no studies under research conditions, regarding service improvement using the SVM approach in an occupational therapy service.

Reminder of the research question: How and why are service level outcomes impacted, after implementing Seddon's Vanguard Method, a service improvement framework, within an occupational therapy service in England?

Given the research question, the aim and objectives, the underpinning philosophical and methodological frameworks need to be set out and justified, as this will guide the research design. For a novice researcher, this can be challenging due to variations in terminology, descriptions, and explanations regarding the philosophical underpinnings of what constitutes reality and knowledge (Qasem and Zayid, 2019). It is also necessary for the researcher to set out their own philosophical positionality, as this will influence the entire research process.

3.2. Philosophical positions

The worldview is on a continuum (Ballinger 2004), from realism, knowing reality of the observable and unobservable not with certainty (Allmark and Machaczek 2018); to relativism, constructing reality from various perspectives (Hirani et al. 2018). Researchers are warned to not commit 'methodolotry', which is choosing a philosophical position because it is well used or fits the belief of the researcher without careful consideration and justification, which will compromise research credibility (Plant et al.1994 and Regelski 2002). The philosophical position must be matched to the research question, not vice versa, otherwise it will constrain the methodology from fully and effectively answering the problem (Chamberlain 2000). To identify the underpinning ontological and epistemological positions in relation to the research aim and question, the researcher answered two questions: i) What is the nature of reality? (ontology - what exists making the world the way it is (Creswell 2015)), what is already known about the social reality (form and nature) of service improvement, and ii) how is reality to be known? (epistemology - how do we study the world to know what exists in the world (Creswell 2015)). The scoping literature review helped to answer these questions, through assisting development of the research question, aim and objectives. The features of the research problem and objectives identify both positivist and interpretivist measures, for capturing both change from the implementation of the service improvement intervention and

changing perspectives of the processes and experiences of the staff and service users. Therefore, we need ontology and epistemology that allow for this.

3.2.1. Ontological position – Critical realism

The scoping literature review indicated that service improvement is complex, and factors influencing service improvement were multiple and measured quantitatively and qualitatively. In addition, the review revealed that there is a scarcity of research literature regarding service improvement in occupational therapy and the multiple dimensions to it, such as staff experiences, patients' views, operational data and evaluating the meaning of the cost data. It is these multiple influencing factors that make up the social reality of service improvement some of which this study seeks to explore. Hence, a solely positivist or interpretivist approach would not align with the research question, and therefore not guide the research design to fully answer the question. For example, a researcher taking a positivist stance, would only acknowledge the quantitative aspects to the approach of service improvement that can be observed, recorded, and measured, thus ignoring the subjective reality of the people involved in building and delivering service improvement. Hence a positivist stance would be reductionist (Howell 2013) and not enable research of experiences, both are influential in service improvement design (Reed and Card 2016).

The critical realist paradigm has a pluralistic position of reality (Bhaskar 2008), hence it was chosen as it aligns with this study's aim and the question to answer, knowing that service improvement is complex and ideally measured by a variety of quantitative and qualitative factors, given the focus was not just on outcomes of the process, but also the experience of the process itself. As such, the philosophy of critical realism posits that knowledge (epistemology) exists in the realms of people's subjective interpretations (interpretivism) and empirical facts (positivism), a pluralistic reality (Bhaskar 2008, Hedlund de Witt 2013, Edwards et al. 2014). Critical realism emancipates researchers to search for truths that are not bounded by the dichotomy of positivism or interpretivism but creating an alternative position of knowing social phenomena (Edwards et al. 2014).

The research is regarding service improvement, which is co-conceived, co-designed and delivered by people providing and receiving services. Hence the conceptual frameworks of social constructionism or social constructivism (Taylor 2018)) were considered but rejected. The reason being that, on a continuum of positivism to subjectivism, social constructionism or constructivism sit at the extreme end of subjectivism, (focus on the outcome/s formed from social interactions of a group and learning that occurs from interactions within a group), whereas critical realism is in the middle, acknowledging a pluralistic reality exists in the realms of a world which is both socially and objectively constructed (Taylor et al 2018, Zeithaml et al. 2020). The reality of service delivery is that it falls into the camp of critical realism, hence research can be across the positivist and interpretivist continuum, opening up opportunities for a variety of methodological choices for researchers (Ryan 2019).

Critical realism is a philosophy of science that sits well with postpositivism. The reasoning being that postpositivism manages the concerns about the pluralistic position of critical realism on the positivism-interpretivism continuum, offering methodologies that can work with the combined use of qualitative and quantitative data (e.g., case study methodology) in research to study complex and open systems such as health and social care organisations (Ryan 2019, Howitt and Cramer 2020). As the critical realism worldview is that the world is complex and formed from interconnected causes, that what has to be connected (researched or expert knowledge) with that what could be connected (subjective experiences) (Sousa 2010). Therefore, critical realism is able to underpin the research aim and question because the study is exploring how and why service level outcomes are impacted from implementing SVM, a service improvement intervention method, where the 'how' of impact is answered from the quantitative measures of service level outcomes and the 'why' of impact is answered from the qualitative data that expresses the experience of changes and decisions made to processes to enable change. The how and why questions are trying to uncover the generative factors, which are both structural and human, that will result in service improvement and 'seen' through service level outcomes (Schiller 2016).

As service improvement is a social phenomenon and knowing that a social phenomenon is complex because it is multifaceted, dynamic, nonlinear, unpredictable and changes with context, interactions, and time (Adam and Humphreys 2008), then research into service improvement has to be both in the realms of positivism and subjectivism to represent complexity, hence critical realism is a valid ontological position for this study. For this service improvement study, critical realism was guiding to ascertain what in reality is objective and accepted subjective truth (Taylor 2018), to then apply an explorative process to elucidate answers for the how and why questions.

3.2.2. Epistemological position – Pragmatism

The study is evaluating the impacts of SVM at service level improvement in an occupational therapy service. Service improvement is a process of decision making and learning through actions, a generative trial and error process to deliver and measure sustainable improvements (Jones et al. 2021). Hence the epistemological position should align with the kind of knowledge being sought. Epistemology concerns the relationship between knowledge, truth, belief, reason, evidence, and action (Kelly and Cordeiro 2020). Therefore, the epistemological position chosen for this research was pragmatism as it relates to the research aim and question in that, as in pragmatism, the research is studying the reality of how staff make decisions to change the services to improve it, how they experience this and gain further information to learn and change again, and how it affects processes and outcomes, within the service improvement framework of SVM that is applied. The pragmatic stance proposes that reality must be experienced for human beings to adapt and learn, and knowledge arises from active participation and adaptation within the environment (Hickman and Alexander 1998). Long et al. (2018) said of health service research and pragmatism, that this philosophical position shows affinity with complexity theory, and enabled a responsive action to the rapidly changing demands of healthcare. The responsive action was as a result of continual learning, changing from the learning, and emergence of further change actions. Kelly and Cordeiro (2020) add that pragmatism in organisational processes research provides an epistemological framework to guide the inquiry process and practical actions of the

research, this supports Long et al.'s (2018) connection of pragmatism and health service research.

The ontological position, critical realism, aligns with pragmatism in that the knowledge created through human action is specific, situational, and out of praxis (Coghlan and Brannick 2009). Hence pragmatism represented and underpinned the research question, aim and objectives (see 3.1.1.), because:

i) The question was gathering the knowledge of the 'how' and 'why' to understand service level outcomes that occur that are impacted due to implementation of SVM. This can be achieved because the researcher and staff act on gathered information to understand the current state of the service delivery, to then make changes to the service, then they react and adapt to the information on how the service performs to the changes. This demonstrates that the pragmatic stance proposes that reality must be experienced for human beings to adapt and learn, and knowledge arises from active participation and adaptation within the environment (Hickman and Alexander 1998).

ii) The research aim included the words explore and evaluate (see 3.1.1. for the full aim statement). To explore and evaluate implies that human action is required to investigate and understand the phenomenon. Learning and changing informs human actions, and human action is central in pragmatism, action changes reality and the world is in a continuing state of becoming as there are multiple actions constantly happening, resulting in outcomes which then create more actions and so on (Kaushik and Walsh 2019).

iii) The research objectives indicated both qualitative and quantitative data will be collected as part of the learning-action cycle that is framed by 3 phase (check, plan, do) SVM cycle. As already discussed in the critical realism section, there are multiple social realties that can be open to empirical investigation (Creswell and Plano Clark 2011). Pragmatism applies an instrument/tool to solve a practical problem (Hickman and Alexander 1998), in this research SVM was the tool, that is it provided a framework to meet the objectives.

3.3. Case Study Methodology

Methodology is the link between the abstractness of the philosophical position and practical reality of the method section (Kaushik and Walsh 2019). The choice of methodology should be explicitly reasoned, relate to answering the research question and sit well with the choice of ontology and epistemology, in this research these are critical realism and pragmatism respectively.

3.3.1. Rejections before choosing case study methodology

There are many methodologies that could be used to answer the research question and deliver the objectives. Several methodologies were considered for this study and rejected before coming to the decision of case study methodology.

3.3.1.1. Realist evaluation

Realist evaluation (RE) is a methodology that could answer the research question and objectives, in that it evaluates context, mechanisms and outcome (Pawson and Tilley 1997). The purpose of RE is to evaluate a predetermined designed program/intervention, in terms of context-mechanism-outcome (Pawson and Tilley 1997). There is current literature on the use of realist evaluation (RE) for service improvement, but not necessarily in occupational therapy and not via implementation of SVM. Examples of current research studies that employed RE methodology for service improvement include, Moule et al. (2018) and Flynn et al. (2019), who undertook service improvement research applying RE. Both identified that this methodology is concerned with answering the how, what, why and where questions, to evaluate the success of whether the intervention works, and the generation of an explanatory intervention theory for generalisation when the theory is already established (VanderKaay et al. 2021, Melton 2010).

However, as RE research has the agenda to generalise its findings to use in other relevant contexts (Pawson, 2013), this is in contradiction to the fundamental principle of SVM that the knowledge found is unique to each service and is not intended for generalisability to other settings (Seddon 2005). The research was exploring a phenomenon, service improvement, that had not much attention in research for

occupational therapy, therefore the theories still needed to be developed for service improvement in the context of occupational therapy. Hence RE was rejected.

3.3.1.2. Mixed Methods

Another methodology that matched the research aim and objectives to answer the research question was mixed methods (MM). The MM approach integrates quantitative type data set to inform another data set that is qualitative, or vice versa, and can be applied at any point of the MM research process, e.g., for recruiting a sample or analysis of the data (Creswell 2015). Examples of MM research evaluating occupational therapy services do exist, for example, Stefánsdóttir and Egilson (2016) used a sequential MM design and Eriksson et al. (2020) used a convergent MM design, both showcased the consideration at the designing point of the research to gain deeper understanding of the results and hence the phenomenon being researched.

This study consecutively collected multiple types of data before and after service improvement changes. The qualitative data informed the decisions regarding process changes to be made to and outcomes measures chosen for the occupational therapy service improvement study, the quantitative data represented the service level data, and the same data were collected consecutively that is before and after design. Therefore, the PhD student researcher's plans for their study to collect qualitative and quantitative data, did not meet the design requirements for mixed methods research, in that on a basic level, the research data were not required to be sequential nor convergent as required for MM studies (Creswell 2015). Nor was the researcher's study design based on MM study advanced level, which are based on trialling intervention, framed on a social justice framework (e.g., critical gender or race studies), or multistage evaluation (e.g., where a stage is an individual study, the process is longitudinal) (Creswell 2015). Moreover, the study did not align with the mixed method core principle that the qualitative and quantitative data inform each other to then answer the research question and meet the aim and objectives to understand the phenomenon. Hence MM was rejected.

3.3.1.3. Action Research

The focus of this research was not on staff being researchers as part of the design, as this would be in the realms of action research (AR) methodology. The staff and service users in this research were participants and data providers. The emphasis of AR concerns justifying the methods for solving an immediate problem, usually through qualitative enquiry, but not always (McNiff 2017). Research on service improvement emphasises analysing and interpreting a particular phenomenon over time from either positivist or interpretivist positions or both positions (Schiller 2016, Yin 2018). Additionally, due to covid restrictions in place from the organisation the PhD researcher, of this thesis, accessed and interacted with the participants and service through the virtual platform Zoom. The researcher was not part of the staff group and was removed from participating with them in action taking. AR requires the researcher being part of the process of taking action as well as doing research, with the focus that the practitioners/participants are researchers in the process (van Biljon et al. 2015, McNiff 2017). Examples of AR research evaluating occupational therapy service improvement do exist, for example, Smith-Gabai (2017) and van Biljon et al. (2015) research demonstrated that the purpose of AR studies is exploring how to solve an already identified problem and the study can go through cycles of "processes of designing, developing, refining, validating" to refine the solution (Biljon et al. 2015, p.40).

Therefore, the AR study aim was different from this research, in that it is solution focussed and this research was evaluating a phenomenon, service improvement, in a specific context to understand the phenomenon in depth over a period of time. Furthermore, this research was not expecting the occupational therapy staff to be researchers with the primary researcher, as the relationship of the occupational therapy staff to the researcher was as the research participants. This discussion supports the rejection of AR methodology for this research.

3.3.2. Rationale for case study methodology

Yin (2018) is a key author of case study methodology for mixed data collection and will be referred to amongst other relevant informative case study literature. Yin (2018) states a case study approach is beneficial when the boundaries between phenomenon and context are not known of the phenomenon being studied within its

real-life context, i.e., service improvement and occupational therapy. Additionally, Hyett et al. (2014) situated Yin's case study methodology within the postpositivist viewpoint, which creates the methodology's link to critical realism. Yin (2018) proposes that case study can be used with both positivist and or interpretivist paradigms but is usually associated with qualitative research (Yazan 2015). Yin (2018) and Thomas (2016) indicated that the more the research question seeks to explore and explain a social phenomenon (case) in a specific context, a deep exploration, through asking how and why questions, then the more appropriate it is to use a single case study methodology. For the proposed research, the specific context was an occupational therapy service in England and the social phenomenon under investigation was service improvement. Furthermore, Yin (2018) asserts that case study methodology reflected reality as data will be collected from multiple points, mixed qualitative and quantitative data collection methods (Jaaron and Backhouse 2017).

There is very limited research literature in relation to service improvement and occupational therapy. Using a case study approach would allow the opportunity to explore, with depth, the multiple factors of a complex problem in a real-life situation (Crowe et al. 2011), such as for a particular professional group working to deliver service improvement.

A single case approach for a new or under researched research topic, i.e., service improvement and occupational therapy, provides the opportunity to take an in-depth examination and exploration to understand the topic *(*Gustafsson 2017). This is a precursor to multiple case study design research where comparisons regarding difference and similarities of the phenomenon in different settings is the focus, about what is generalisable, whereas single case is focussed on particularisation, what is occurring in a specific context (Gustafsson 2017). The single case study approach was suited to this research as service improvement in occupational therapy is an under researched area, as identified by the scoping review in chapter 2. The outcome of the research was to build evidence of practical knowledge and understanding of delivering service improvement for an occupational therapy service through applying SVM. The scoping literature review in chapter 2 identified very

limited numbers of research studies using case study methodology and SVM in occupational therapy or healthcare and social care. However, SVM had been implemented in other settings utilising a case study methodology. For example, Jaaron and Backhouse (2014), applied SVM to an insurance company, and Pham and Jaaron (2017) applied SVM to higher education. These papers similarly identified the use of case study methodology, as discussed already, for in-depth examination of a case to answer a 'how and why' research question, when the phenomenon of service improvement is not well understood in the contexts, hence supporting the relevance of using case study methodology to answer the research question for this study.

Yin (2018) explicates case study as a research methodology through what he terms as the trilogy of case study: Case study research methodology - Case study as method - Case unit (Table 3.1):

Table 3.1. Summary of Yin's (2018) trilogy of case study methodology, case study method and case unit

Case study trilogy	**Explanation**
Case study research methodology as the mode of empirical enquiry.	To investigate a social phenomenon, which is the case, that is time and context bound, underpinned by research philosophy/ies and research conditions. To understand the factors influencing the social phenomenon through qualitative or/ and quantitative factors. Using a systematic approach to applying good practice standards of research rigour, to answer a 'how and why' research question.
Case study as method of research enquiry	Practical information is presented in relation to the case in context. The method can exist outside research, an example in point, is the online article exposé exploring the worsening waiting times for cancer services (Nuffield Trust 2021), by drawing on multiple data points to discuss the issues. Another example, one of the five papers from the scoping literature review, a consultancy company report, described the service level outcomes from implementing SVM to an occupational therapy service (Zokaei et al. 2010). Case studies used for

	professional development, are a teaching and learning tool. Examples of research methods are a laboratory experiment measuring bacterial growth or a survey of a sample population's views. The research method for this study is examination of a case in a real-life context, the phenomenon of service improvement is the case, within the context of an occupational therapy service in England.
The case's unit of enquiry in a case study	The case units in case study can be from a person, a group, a service or organisation where the measurement data comes from.

Yin (2018) elaborates, case study methodology is not just about writing well a case story exposé, it is demonstrating engagement in robust and rigorously designed research, and the research method being case study. Yin (2018) continues that by applying rigour to research it will authentically elucidate the richness, depth and specificity from the data collected and analysed to answer the research question (Woodside 2010).

Yin's (2018) and Jaaron and Backhouse's (2017) explanations of case study methodology supported this research employing the methodology; as this study was investigating under explicit research conditions a social phenomenon. That social phenomenon being the single case of service improvement, within the context of an occupational therapy service in England, to understand in depth the phenomenon in a real-life context. This justification is further supported by Gerring (2004), who suggests that a single case study is about particularisation, to understand specifically what has occurred regarding the phenomenon (case) in context, which is the intention of this research rather than generalisation. In summary, case study research method is used when the research is answering how and why questions, the focus of the aims and objectives is not to manipulate variables or behaviour but to examine the question in a particularised situation and real context.

In case study methodology there are 2 types of case study research methods, exploratory and explanatory (Mills et al. 2010). This research was employing exploratory case study method, as the scoping literature review identified that there was very limited literature in relation to service improvement (phenomenon/case) and occupational therapy service (context). Hence in line with exploratory case study method, the research was to better understand the phenomenon in the particular case within its context (Mills 2010, Yin 2018). As such this research method was not explanatory case study as it was not seeking to affirm existing theory explaining a phenomenon in context to investigating causal relationships (Mills 2010, Yin 2018).

A further rationale for utilising case study research to explore service improvement within an occupational therapy service, is based on one of Yin's (2018) five rationales for a single case study approach (critical, unusual, common, revelatory or longitudinal):

Common case

The objective here was to elaborate on the conditions and situations for an everyday occurrence (service improvement) because it may reveal some new knowledge and understanding about the process and related theory/ies (Yin 2018). In relation to this research, the process is delivery of service improvement (case) in the context of occupational therapy. In chapter 1 the background information identified that there is ongoing activity in health and social care to continuously improve quality and governance of services, to keep up with the changing evidence, workforce, and funding (The Health Foundation 2013). A single case study approach is relevant to maximise the depth of the investigation (Herr and Anderson 2015) of the impact of the implementation of SVM, particularised to an occupational therapy service. It has the potential to build knowledge and understanding from answering the research question (Yin 2018), for example, identify and understand some of the generative mechanisms that enable service level outcomes to occur from the implementation of SVM. So, carrying out a research study in relation to service improvement in occupational therapy through applying SVM would be seen as a common cause rationale as the research was attempting to share insights about effective service improvement, and the related outcomes for service delivery in healthcare.

As stated earlier, there is only one case report published by a consultancy company, specifically regarding occupational therapy service improvement and SVM implementation (Zokaei et al. 2010). However, the literature reviews by Carey (2020) and Hercegovac et al. (2020) have collated examples of occupational therapy and single case study research, and as such, these reviews indicate that the single case studies they identified have more emphasis on clinical intervention effectiveness, rather than whole service/quality improvement, which supported that limited literature on occupational therapy service improvement was identified from the scoping literature review. Additionally, another line of thought from the literature reviews by Carey (2020) and Hercegovac et al. (2020), is that it could be that occupational therapists were more focussed on clinical understanding rather than how they improve expertise in how they deliver their services. Applying SVM to an occupational therapy service provided an opportunity to explore and analyse the phenomenon of service improvement in action in real life. This research has the potential to provide further insight into the process of service improvement and factors influencing outcomes, within the context of an occupational therapy service. Thus, potential to add to the existing body of research knowledge and understanding of implementing SVM for service improvement for occupational therapy services.

The scoping literature review in chapter 2 identified that there are limited numbers of papers where the case study methodology was applied with occupational therapy service improvement research and SVM. Alternatively, there are research papers in healthcare beyond occupational therapy and SVM that employ this methodology, e.g., Baker (2011), Melo (2016) and Ursu et al. (2019). However, Crowe et al. (2011) put forward that single case study approach is a rarely seen methodology in healthcare services' research due to healthcare researchers wanting the research outcomes to be generalisable for wider application. As there is a pressure to find that universal solution of one-size-fits-all for service improvement, Dixon-Woods and Martin (2016, p.191) refers to it as the search for the *"'magic bullet'"* as much of service/quality improvement fails. Generalisability was not the end purpose of the single case study focus, rather it was understanding the case through specificity and particularisation (Crowe et al. 2011). Context is an influential factor in service

improvement because, e.g., the mix of people and relationships/behaviours, the culture, the leadership, the impact of policies and politics are different and specific to each case's situation and produces a unique set of circumstances and hence outcomes (Øvretveit 2014, Coles et al. 2017). This relates to the critical realist research's agenda to explore what works for whom and in what setting. In chapter 2 it was discussed that generalisability should be avoided in service improvement as the process of change to services should be context specific for sustainability (Seddon 2005, 2014; Nuffield Trust 2018).

Baker (2011) identifies that organisational research on quality improvement that uses case study methodology, improves macro and microlevel understanding of how to improve healthcare due to the multiperspectives of data collection incorporated into the research to understand the 'how' and 'why' of the outcomes that occur (Yin 2018). Furthermore, by using case study methodology there is the potential to develop theories and strategies that could be applied in similar contexts (Baker 2011). Thus, the findings of a case study are potentially transferrable if related to similar healthcare contexts. The aim and objectives of this research aligned with Baker's (2011) assertion that macro and micro level 'how' and 'why' answers could be found, as this research wanted to uncover how the human and non-human outcomes were impacted for service improvement, social phenomenon, by uncovering why the decisions were taken and how the decisions were implemented.

Melo (2016) suggests that in relation to their case study research exploring the complexity of accreditation and the impact it has on quality improvement in healthcare, that this research approach enables a multi-perspectives understanding of the phenomenon of quality improvement. Furthermore, Melo (2016) identifies that the choice of case study methodology enabled the research to explore complex events in a real-life context and created capacity for in-depth analysis. As established in chapter 2 that service improvement is part of quality improvement (The Health Foundation 2013). Then it can be asserted that the case study methodology was a feasible approach for service improvement research, to understand and examine the complexity of service improvement and the influences

arising from the context, The context being the occupational therapy service. Hence the case study approach for service improvement research could potentially elucidate information regarding the service level components for effective service improvement outcomes.

The most prominent criticism of a single case study research is in relation to generalisability or external validity (Bennett and Elman 2006). However, a single case study focuses on particularisation, detailing and understanding what has occurred in relation to the phenomenon in context, rather than generalisation (Gerring 2004), the latter is not the intention of this proposed research. To reap the benefits and reduce the limitations of a single case study research design, there must be rigour through reflexivity, mixed data collection, peer or supervisor checking, supervisor debriefs and thick descriptions (subjective descriptions of social actions in context) (Houghton et al. 2013). This study therefore aims to deliver each of these processes. Other criticisms of case study research suggest that it lacks methodological rigour and transparency of application of a case study protocol (Paparini et al. 2020). A case study protocol outlines and makes transparent the procedures and rules governing the conduct of researcher/s before, during and after case study research (see Table 3.2) (Yin 2018). This research will follow the case study protocol and phases as outlined by Yin (2018) and framed by Eisenhardt (1989):

Table 3.2. Protocol for case study research developed from the guidance from Eisenhardt (1989) and Yin (2018)

Case Study Protocol	
A: Overview of the case study	A statement to briefly explain the purpose of the case study to share
B: Data collection	Collecting data from people and services in everyday working situation Planning for all the resources required to enable data collection Arrangements to gain access Location of data collection

	Identify data to be collected: Interview or focus group, Numerical operational data, cost data Producing a clear schedule/plan for data collection Having plan Bs for unexpected events
C: Protocol questions	Questions about the case representative of the line of enquiry The prompts for this are the questions: "Why am I as the principal researcher taking this action?" "Why and how am I collecting this data, who/what is it about, and from what source?"
D: Tentative outline of the case study report, sharing.	For exploratory case study: problem identification, literature review, method of data collection, results and analysis, findings and implications, and conclusion.

Flyvbjerg's (2006) paper discusses the 5 myths about case study research, one of them being that case study is biased toward verification because of the researcher's preconceived notions and expectations. Flyvbjerg (2006) purports that there is an elitism in relegating case study and qualitative research as a lesser scientific method to quantitative research. He continues that this accusation of case study is wrong, case study has rigour different from quantitative research rigour but no less. After all case study research design is the examination of a phenomenon as it unfolds in real-life, different from a manipulated or controlled environment research design.
Hence in response to the concerns about case study research rigour, Yin (2018) designed a case study protocol to reduce bias to improve rigour in case study research, and this study is following this protocol (see Table 3.2 and 3.3.). At any time there is a new/under reported methodology in research, put forward against the backdrop of dominant methodologies, there is unease/resistance to its credibility,

such as the not well used case study research design that incorporates a mixture of qualitative and quantitative data collection methods, as opposed to the familiar qualitative case study which has been in popular use since the 1960s (Kohlbacher 2006). The physicist and Nobel Laureate Richard Feynman (1999, p.146) stated, "*We absolutely must leave room for doubt or there is no progress and no learning ... People search for certainty. But there is no certainty*." So, it is right to scrutinise and critique the case study methodology's underpinning theories to strengthen its reasonings, improve understanding, and to grow the method's evidence by more research critically applying the methodology and method to continue developing understanding of it.

Table 3.3. Phases for case study research protocol developed from the guidance from Eisenhardt (1989) and Yin (2018)

Phase	**Stage**	**Activity**	**Reason**
One	Getting started	Define the question/s Possible a priori concepts	Direct researcher effort/s Provides better context to measures
	Selecting the case	Neither theory or hypothesis Specified population	Keeps theoretical flexibility Constrains external validity Focus on particularisation
	Instruments and protocols	Multiple data collection Quantitative and qualitative	Represent the complexity of problem by collecting as much data from context as able
Two	Entering the service	Iterative data collection at least two points in time Opportunistic data collection identified from evaluation	Organise and coordinates analysis Facilitates analysis

	Analysing the data	Within the case	Enables familiarity and understanding of the data Enables exploration beyond initial impressions
	Shaping meanings	Collate the data to show meanings or relationships Search for the 'why'	Builds internal validity Sharpens measurability and construct definition Confirms and or extends theory
Three	Enfolding the literature	Compare to opposing or conflicting literature Compare to supporting literature	Builds internal validity Sharpens measurability and construct definition
	Reaching closure	Theoretical discussion saturation	End the process
	Composing case report	Tentative outline of the case report	By sharing it will sharpen: the textual and visual materials, writing of conclusion to bring results and findings to closure, and display of evidence to enable reader to arrive at own conclusions

To summarise, this research employed Yin's (2018) case study methodology, because ontologically and epistemologically this research was offering an alternative way to understand reality that was not perpetuating the dichotomy of knowledge as qualitative or quantitative. Furthermore, as the phenomenon in context was not understood it is relevant to apply case study methodology for an initial in depth exploration. This is relevant to the objectives of the research which indicated that a mixture of data would be collected to answer the research question identified from

the gap in research. Critical realism removes the dichotomy of choice between positivism or interpretivism and offers an alternative to the knowledge realms of a pluralistic reality.

3.4. Ethics process

All research must address and fulfil ethical conduct as set out by the good practice management and conduct of research in the UK, to protect the patients, service users and all participants in health and social care research (NHS Health Research Authority 2021). The researcher is a PhD student at London South Bank University (LSBU) and the university follows the Code of Practice for Research by the UK Research Integrity Office (2009) (see LSBU webpage https://www.lsbu.ac.uk/research/governance for further information):

- "setting the principles, requirements, and standards of good practice in research in our organisation
- defining mechanisms by which our organisation and individuals address the standards and obligations for undertaking research
- improving research quality by providing a framework for the conduct of research which should enhance ethical and scientific quality; promote good practice in research; reduce adverse incidents; ensure lessons are learned and prevent poor performance and misconduct".

This research underwent three points of ethical scrutiny:

▶Firstly, the research was submitted to the university Research Ethics Committee which scrutinised the application to confirm that the study adhered to the guidance, as set out by the doctoral school and necessary ethical frameworks and standards. The study was given clearance to submit to IRAS (Integrated Research Application System) on the 07 05 2020. IRAS is the single e-submission point for approval for health and social care and community sites for research from the Health Research Authority (HRA).

▶Secondly, the research required a health or social care occupational therapy service as the research site, hence the research had to be approved by the HRA ethics committee. The research protocol and research participant paperwork were

reviewed by an external ethics panel to the university allocated by HRA. The HRA, ensures that the research is safe, transparent and the methodological process is sound. Virtual attendance at the HRA committee was compulsory, following this amendments were required to simplify the Participant Research Information Sheet and the Participant Consent Form. The HRA research committee meeting was on 03-07-2020 and approval was gained 25-08-2020.

▶Thirdly, it was a requirement that once a research site was identified the Research and Development Department governance process of the organisation was to be completed. This process started 23-09-2020 and was completed and letter of access was received to implement the study at the site 18-11-2020.

Each layer of scrutiny from each ethics research committee enabled the researcher to refine and simplify the content of the paperwork, improving its accessibility for patients and staff. Thus, reducing this research's risk of harm and use of unethical procedures.

3.4.1. Ensuring consent

NHS HRA (2021) Research Framework states that the quality of the participant information sheet (PIS) should support the process for the person to freely consent. The NHS HRA provide a template for the researcher for the participant information sheet (PIS) and the consent form, to enable researchers to follow a good conduct process and produce a document of quality.

This researcher used the NHS HRA guidance and template to form the PIS and consent form. Included in the PIS was clarification that consent is ongoing and can be withdrawn at any time as directed by the template guidance. Consent must be obtained before the data collection process, and this was carried out, by email to all participants and a signed copy of the consent form from participants was returned via email.

A researcher must consider the ethics in the recruitment process of the participants to not cause undue harm or distress. The participants recruited for the research were occupational therapy staff, their manager/s and their patients at the research site.

The patient participants were patients who were discharged from critical care and had received occupational therapy. It was posited that to reduce the stress of being approached by a stranger, it would be better for the patients to be initially approached by the occupational therapy staff, which potentially may improve recruitment. This patient recruitment process was approved by the NHS HRA and the research governance department of the research site. However, the process did not come without some ethical concern about the power position of influence of the staff over the patients, and how this potentially could be coercive. To counteract this, the process of gaining consent from patients was led by the lead occupational therapist under the instruction of the PhD student researcher. For the chosen service user participants, a pack was posted to them, this included:

- a front cover letter designed to introduce to the service user why they are receiving the mail, with the researcher's email address in case a service user needed to ask any clarifying questions.
- The PIS document, explaining why they have been contacted, the purpose of the research, benefits and disadvantages of consenting, and how to contact the researcher and who to complain to.
- The consent form and how to return it, with an envelope with the name and work address of the lead occupational therapist.

Two weeks was the waiting time to receive a return posted signed consent form. This was also the timeframe after which to post a reminder letter. The returned consent forms were kept by the lead occupational therapist in their office in a locked draw.

Although the agreeing occupational therapy service had given permission to be the research site, it was also necessary to gain consent from the occupational therapy staff for transparency and good research standard of practice. Additionally, research approval was also based on that the staff on the site would have access to the patient data and report the necessary data to the researcher, this is another layer to maintain the confidentiality of patient records, (see Appendix 2 for consent form, Appendix 3 for PIS form submitted (both approved by HRA ethics committee) and Appendix 4 for front cover letter.

After attending the HRA Ethics Committee, on top of advising about simplifying the information in the PIS in relation to explaining the research, the committee also advised that the researcher should undertake a personal update on the Mental Health Act 2007, prior to the research commencing. This was suggested so that the researcher would be better prepared to deal with any vulnerable participants and ensure their safety. An e-learning course was identified by the researcher and completed 19-07-2020. A certificate of completion was provided by the organiser, Social Care Institute for Excellence (see Appendix 5 for certificate).

3.4.2. Maintaining confidentiality

Confidentiality is an essential part of ethical conduct for research (NHS HRA 2021). The research complied with the NHS HRA ethical conduct for research regards confidentiality (NHS HRA 2021) through the following mechanisms:

- in the thesis the organisation and service were referred to as a NHS hospital, the service was referred to as a critical care occupational therapy service in England, and all names were referred to through pseudonyms;

-for the audio recording of the interviews, all were directed to use pseudonyms, chosen by each person, to be referred to within the recorded discussions;

-all e-data were stored in the researcher's drive on one drive on the LSBU server and;

-the patient consent forms were kept with the lead occupational therapist on the research site in a locked drawer in their office.

3.5. Data collection

Chapter 1 identified that the SVM is a 3-phased cycle of Check-Plan-Do. The researcher and the occupational therapy staff together followed a learning-change cycle, the SVM service improvement framework (instrument/intervention). The first Check phase was the 'deep dive' into the service to understand how it was currently working and performing, collating what was effective what was constraining, and realising what was the defacto (real) purpose (the current existing purpose) and what was the actual purpose (the desired purpose for the service, developed from the evaluation information) (Seddon 2005). Continuing on in the Check phase through evaluation the staff identify what was the actual purpose of the service, and what

changes were needed for the service improvement. The Plan phase was where a plan of action was developed to implement the changes from what had been learnt from the Check phase, and the timeframe to gather the data from the outcomes to be measured as agreed from the Check phase (Seddon 2005). Not all changes were implemented at once, a few changes were chosen to be implemented. The Do phase was the implementation of the action plan stage. Then returned to the Check phase to monitor, review, reflect, and gather the data for the agreed period of time of the Do phase, and then analysed the data. Then the process is to iterate through the SVM cycle as many times as required, the staff learn as they design for changes by being explorative, iterative, and generative (Reed and Card 2016). In this study the agreed data collection timeframe of the research was Jan-Jun 2022. The reason for not implementing all the changes at once is that it would destabilise the service's ability to continue to deliver its service (Seddon 2005). This is a risk reduction based approach, start small, trial to understand what works which leads to less resource use (Reed and Card 2016).

All data collection methods (Phase one of the case study protocol Table 3.3) were in line with the methodology and the research aim and objectives. To maintain methodological rigour and credibility it was necessary to follow the phases in accordance with the protocol identified for case study methodology, see table 3.3. of this chapter, and the SVM service improvement framework, the service improvement intervention method, as identified in chapter 2, to make sure that the research design was explicit and rigorous (Yin 2018).

During phase one and as part of the SVM process, in the Check phase the staff need time to evaluate their service end to end. This had to be done over a period of time, so they got time to consider and reflect upon what has been raised and where they want to go next with their evaluation. But before this the staff had to be inducted regarding the SVM service improvement process. This was done through sharing video recordings that the researcher had composed so that staff could access these through Google drive links, due to the pandemic COVID19 lockdown period no researchers were allowed on site and no research was allowed to be carried out. Staff also had opportunity to ask questions if they needed to via email:

Research induction presentation 1 (video)
https://drive.google.com/file/d/1OntOBAfeLePDBFTkqxcjaDs-6p-2Uo7H/view?usp=sharing

Research induction presentation 2 (video)
https://drive.google.com/file/d/1j0GLX_q6BEM61TgOEr5dxsHQDFuVNv_N/view?usp=sharing

This induction procedure appeared to work well, in that it enabled the staff group to preview the research background and process, and potentially what and how they will be involved, and questions raised could be answered without delay due to the pandemic restrictions. Phase one of the case study protocol, table 3.3, included the necessity to declare the data to be collected and data collection methods. This aligns with the Check phase of the SVM framework, which stipulates that the data to be collected will emerge from the multistakeholder service evaluation and relevant data analyses, the latter is collected as usual practice for the service performance monitoring, e.g., service user satisfaction, or staff sickness days. As part of phase one of the case study protocol for identifying and collecting as much data as possible, relevant data to collect regarding the case is also sourced from the relevant research literature (i.e., from the scoping literature review). This is in line with the critical realism paradigm which suggests that relevant research literature also holds the knowledge of what data to collect for research (Raduescu and Vessey 2009, Frederiksen and Kringelum 2021). Table 3.4. collated the information of the service level data to be collected from the occupational therapy service and how the scoping literature review in chapter 2 supported collection of such data. As stated already the data to be collected from the occupational therapy service will be taken from multiple perspectives to capture some of the complexity of service improvement.

The data collection was consecutive as this study is collecting data before and after the implementation of change for service improvement. The data collected before was the same data collected after (Table 3.4.), unless in the Check phase discussion data for collection is identified as for after collection only.

Table 3.4. Data to be collected identified by staff and from the scoping literature review

Data to be collected	**Supported by scoping literature review**	**Type of data**	**Data collection point for this study**
Identifying service level outcomes from Check phase of SVM cycle	Zokaei et al. 2010, Allder 2012, Anderson and Parkyn 2012, Gibson and O'Donovan 2014, O'Donovan 2011	Quantitative data, from outcomes identified to be measured that was identified by service users and staff	Before and after, Before data: Where available data will be identified from years 2019, 2020, 2021. After data: Jun-Jan 2022
Feedback from service users and staff views of experiences of occupational therapy service provision	Clients – Zokaei et al. 2010, Hood et al. 2020; carers – Allder 2012; carers, staff, clinicians – Anderson and Parkyn 2012, Hood et al. 2020	Qualitative to identify and evaluate enablers and barriers of service provision	Before and after – service users Before, during, after – staff Before will occur in the Check phase of the SVM, Aug – Dec 2021. During will occur Mar/Apr 2022. After will occur Jun/Jul 2022.
Staff morale	Reflected through sickness and retention mentioned - Zokaei et al. 2010	Quantitative – sick days taken by staff	Before and after
Staff motivation	Identified before but not compared to after - O'Donovan 2011, Anderson and Parkyn 2012, Jaaron and Backhouse 2017	Quantitative - Will measure using standardised Multidimensional Work Motivational Scale (MWMS) questionnaire for staff	Before and after. The before measure taken prior to starting SVM process March 2021. After will be Jul 2022

Cost of occupational therapy per patient	cost of service - Zokaei et al. 2010, O'Donovan 2011, Allder 2012	Quantitative - Will calculate cost effectiveness, ICER (incremental cost effectiveness ratio) for occupational therapy service per patient	Before and after.

The rationale for the approach for collecting the majority of the same data before and after was to capture the impact on service level outcomes after the implementation of the service improvement intervention, SVM. In the scoping literature review regarding outcome measures one of the recurring data collected was end-to-end timeframe from admission to discharge. Another aspect of outcome measures indicated by the scoping review was the service user satisfaction data. Service user satisfaction data is a traditional outcome measure related to clinical effectiveness and can lead to better safety (Doyle et al. 2013) as on a limited information basis it informs whether the service is, or is not, meeting the needs of the service users from the trends of the responses. Furthermore, a study by Abbasi-Moghaddam et al. (2019) on evaluating the factors for patients reporting positively on clinical experiences, identified that the determinants of service quality were the patients' perception of the consultation experience, the information provided to patients and the environment where the service is being delivered.

3.5.1. Rationale for the quantitative data identified to be collected

The rationale for the quantitative data to be collected are discussed for the study:

- Staff sickness days and retention numbers

The number of staff sickness days and retention rate is an indication of staff behavioural response to stress and satisfaction at work (Kelley 2011, Alilyanni et al. 2018). Kachi et al.'s (2020) Japanese large scale study confirmed the relationship between work stress and turnover of staff; and Ybema et al.'s (2016) Dutch longitudinal study outcomes of older employees indicated changing procedures to reduce stress and prevent productivity loss. Regardless of the country's context there is linking of employee work stress to sickness days absence and staff

retention. Hence this service level measure would indicate the impact of the service changes through collecting data measuring sickness days taken and loss of staff from the service. The data were provided by the manager by email, maintaining confidentiality and anonymity.

- Quantitative data that were raised for collection for the service improvement identified in the Check phase by staff and service users will be collected by staff and shared via a password protected excel spreadsheet.

- Staff motivation at work

Staff motivation at work is an indicator of staff satisfaction at work (Pink 2011, Lockwood 2010, Fernandez and Moldogaziev 2011, Matheson 2012). Moreover, motivation at work is an important measure because it is an indicator of success of the service/organisation because the staff are engaged in the work to do 'good' (Pink 2011, Fernandez and Moldogaziev 2011). The free MMWS questionnaire for research purposes has the question "Why do you or would you put effort into your current job?" that is applied to 19 statements and is "accompanied by a self-reporting 7 point rating scale: 1= not at all for this reason; 2= very little; 3 = a little; 4 = moderately; 5 = strongly; 6 = very strongly; 7= completely for this reason"(Gagné et al. 2015, p.196). The 19 statements are separated under 6 psychological drivers of motivation at work based on self-determination theory and is validated for seven languages over nine countries (Gagné et al. 2015), (see Appendix 6 full questionnaire). The validity report is in a published article by Gagné et al. (2015). In summary the article communicates that the scale was tested on 3435 employees in seven languages across nine countries, and that the convergent and discriminant validity analyses across the countries indicated that "the psychological needs for autonomy, competence, and relatedness" are a precursor to motivation at work and in turn are predictably related to important work outcomes "(e.g., well-being, commitment, performance, and turnover intentions)" (Gagné et al. 2015, p.178). Thus, work motivation is controlled from extrinsic or intrinsic motivations which can be externally (e.g. by rewards and punishment) or internally (e.g. holds interest for the person) controlled (Ryan and Deci 2020). The limitations for a self-reporting tool are that it is providing a snapshot of how the person is feeling about the topic at the

moment they are filling in the questionnaire and is dependent on factors influencing the person's thoughts and feelings at that moment (Wetzel et al. 2016, McClure 2010). This can be reduced by taking the questionnaire at more than one point (Wetzel et al. 2016), and this research applied this scale at two points, before and after the study.

- Cost effectiveness evaluation

From the scoping literature review findings analysis, Chapter 2, under the theme '*SVM leads to efficiencies for service delivery'* there was the subtheme, *the saving or reducing of costs'* (Zokaei et al 2010, Anderson and Parkyn 2012, Gibson and O'Donovan 2014). Stating a cost reduction does not enable understanding of the value of this for the service. Hence, a cost effectiveness analysis would provide an evaluation of the value for money significance of the cost change (i.e., cost difference) if identified, in that the cost effectiveness analysis would indicate whether the resources of the service are optimally applied (see figure 3.1) (Fox-Rusby and Cairns 2005).

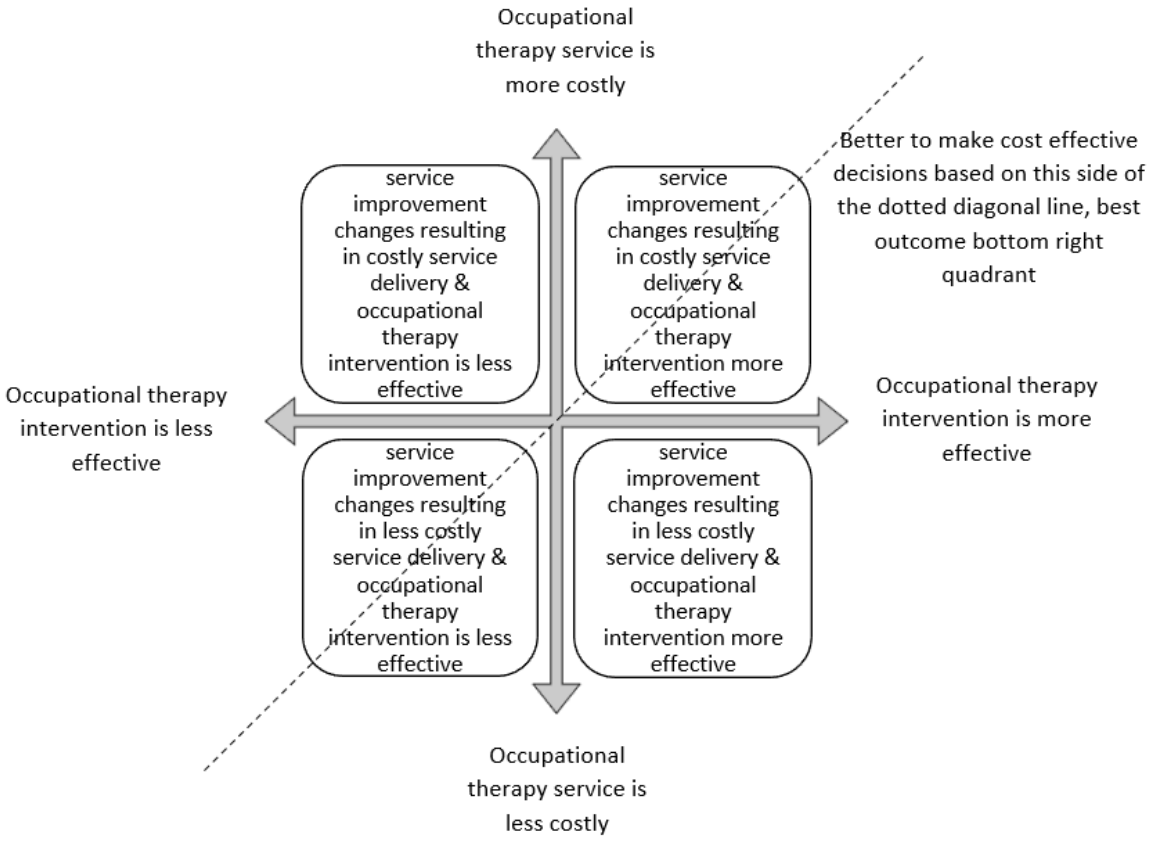


Figure 3.1. Adapted from Fox-Rusby and Carin (2005, p.154) cost effectiveness decision making plane

3.5.2. Rationale for the qualitative data identified to be collected

- Service user experience of service

This is an indicator that the service is delivering what the service user wants, similar limitations to self-reporting apply. As part of the service evaluation in the Check phase of SVM, discharged patients were interviewed in a group setting before the implementation and after the implementation of SVM. The groups were audio recorded for transcription. Once the participants had confirmed accuracy of the transcript, the recording was discarded. As the patients were discharged, the same patients were not interviewed before and after. The before data collection occurred in the Check phase of the SVM, Aug – Dec 2021, and the after the research implementation data collection occurred Jun/Jul 2022. The number of patients identified for the group evaluation was 6-8 and this was agreed with the occupational therapy staff. Each focus group was for a maximum one hour so that the least amount of inconvenience would be given to the service users without compromising their opportunity to discuss their experience of the occupational therapy service.

There are lots of debates about the best number of people for focus groups. Barbour (2018) elaborates that if the number of individuals for a group discussion is less than eight people, then this was no longer a focus group, but an interview session in a group setting. Barbour (2018) distinguishes that usually focus groups gather the interactive responses from the group, however, when the group is less than eight persons, the researcher will ask a main question and prompt (e.g. through reflecting back what participants have said) and collect responses in a group gathering. The researcher provided HRA with a transcript of the introduction, and the question that was also provided to them to be transparent as to what questions were to be asked, and how they would be prompted to be transparent (see Appendix 7).

The question asked was regarding what the service users views and experiences were of the occupational therapy service they received. To help the conversation if it stalled, the PhD researcher would use mirroring technique, whereby they would repeat back what they said and ask for further expansion or clarification. In general, an overall protocol was provided to the NHS HRA ethics committee that highlighted and summarised the research rational, design and process (see Appendix 8).

- Staff experiences of service delivery

The rationale for this data collection was the same as for the service user data collection. The occupational therapy staff will also be interviewed in a group gathering to evaluate the service. The number of interviews will be:

-Pre-research implementation

3x evaluation meetings

1x planning changes meeting

-During research implementation

1x evaluation meeting

-After research implementation timeframe

1x evaluation meeting.

This is the only data that was collected before, during and after the study. Each focus group was 3hrs maximum to enable time for deep reflections of the service. The meetings was audio recorded for transcription, once the participant confirmed accuracy of the transcript the recording was deleted. The number of staff in the focus group were dependent on how many were in the identified service, from qualified to unqualified. When these data were collected in the check phase in the SVM process, these were collected over several sessions, pre-implementation 4 sessions were identified with staff to evaluate the current service, and helped the staff to identify the contextual outcomes to be measured (Sept-Dec 2021), during the implementation of change one session (Mar/Apr 2022), and after data collection one session was identified (Jun/Jul2022) to evaluate the experience of the process. There is a tendency for quality and service improvement studies to follow the before and after data collection design, to make simple linear links between the before and after data sets (Ramaswamy et al. 2018). Broer et al. (2010) identify that service improvement studies have rarely explored the process during service improvement, which could remove 'black box' rhetoric regarding service improvement, in that you can identify what changes are made and the outcomes of those changes, but rarely is it elucidated what goes on in between. There appears to be an 'urgency' in health and social care to identify a standardised transferrable solution for service improvement to other settings (Nuffield Trust 2018b), without investigating what works when, why, and how. In contrast to SVM service improvement which is identifying the solution

that is specific to the context within a case. Hence these data were also collected not only before and after but during for this reason. This set of data which were collected at multiple points was to explore and evaluate the implementation process of SVM service improvement from the staff's views, especially as this was missing in the literature regarding SVM service improvement which is a limiting factor of the SVM evidence. Similar to the service users' requirement, as part of the HRA ethics approval a script of the introduction and the main question was produced (similar to Appendix 7).

The question asked was what their views and experiences are of delivering the occupational therapy services, to prompt their evaluation of the service. Similar to the service user focus group, the mirroring technique will be used to prompt discussion if it stalls.

3.6. Recruitment

Recruitment of all participants was declared and cleared by the ethics committee. The sample participants for this research were the managers, staff, and patients of the identified critical care occupational therapy service. Typically, in a single case study the sample is one, that is the setting for the bounded case, however as part of the case examination the recruitment of the participants was from within the case context, as they hold the information to explore and examine the case, this was by applying purposive sampling (Yin 2018, Schoch 2019). Purposive sampling keeps in mind when selecting the sample, the purpose of the research and research question, thus allowing an in-depth exploration of the phenomenon in context (Schoch 2019). The research question already identified the context for the research as an occupational therapy service and examining the impact on service level outcomes from the implementation of SVM for service improvement, implemented by occupational therapy staff. Furthermore, the operational data collected about the service were the data already available in the system, this was referred to as a convenience sample (Etikan et al. 2016), as new data were not being created for the study. Purposive and convenience sampling is under the category of non-probability sampling, furthermore non-probability sampling is said to be time and cost reducing to identifying participants for research (Uprichard 2013).

The non-probability sampling decision making process was guided by critical questions and the corresponding answers, such as those raised in Berndt's (2020, p.225) article on 'Sampling methods':

Questions 'What is the.."	Answers
"Basis for selection?	Non-random-selection
Likelihood for sampling bias?	High
Objective or subjective method?	Objective and Subjective
Opportunity for selection?	Not specific and unknown
Type of inference?	Analytical
Type of research?	Exploratory, descriptive."

The limitations of nonprobability sampling are that it can lead to selection bias and hinders generalisability of research findings (El-Masri 2017). Selection bias occurs because the sample of participants is not fully representative of the population, i.e., those that accept to be part of the research, are not representing those who are indifferent or have negative views or those that do not have access to technology to participate on the zoom platform, and hence the results cannot be generalisable (El-Masri 2017). This single case study was not focussing on generalisability but particularisation, an in-depth exploration of an under researched phenomenon within a specific context, adding data to the evidence base of service improvement implementing SVM in occupational therapy. The impact of any research bias was kept reduced through the measures identified later in this chapter.

3.6.1. Recruitment of occupational therapy service and staff

In the SVM literature it identifies that SVM is better used when the staff of the service are ready for change or are wanting a different way to approach change because their previous attempts have failed (Seddon 2008). This is related to theories of cognitive engagement of motivation, a person invested in wanting to change, being a good predictor to engage in actions/activities that will potentially lead to change (Heckausen and Heckhausen 2008). Hence by advertising and promoting the research, it was hoped that those who volunteered were ready for changing their

service delivery. The SVM could be thought of, from the psychology perspective, as an intervention, and as such interventions are for creating behavioural change from cognitive shifts and environmental adjustments. From 2017 the researcher approached her colleagues in the occupational therapy placement team at her workplace to advertise the research to their practice educators and the researcher also advertised the study to clinicians that attended interviews to select new students for the occupational therapy courses. Also, posts were placed on twitter asking for show of interest from occupational therapy services regarding applying the research. Additionally, the researcher contacted her known occupational therapy clinical associates to discuss the research. In total: 2x NHS hospital, 2x social services and 1x acute mental health hospital occupational therapy services showed interest to apply the research. On the 25-03-2020 the current research site confirmed that they agreed to the research being applied to their service. The occupational therapy service that agreed to be part of the research was a critical care unit in a hospital in England (critical care unit occupational therapy will be abbreviated as CCU OT). They identified their rationale to be part of research as, that it was timely for the CCU OT service to be reviewed to identify necessary changes and evaluate the impact of changes.

The staffing of the occupational therapy service in critical care were that the service had: a lead occupational therapist at grade 7 who is part time, another part time grade 7, a new full-time grade 7 on critical care wards, and a grade 6 who is split between critical care wards and other wards. The service although started in 2018 with one therapist, it was fully taken forward by the current lead occupational therapist from 2019. The CCU OT staff work within a multi-professional team for care planning and pathway, that include for example, team lead consultant, medics, nurses, physiotherapists, speech and language therapists, psychologists and more (Intensive Care Society 2022). Occupational therapists being part of the multi-professional team in critical care units is on the rise and guidance for CCU OT services has been provided by the Intensive Care Society (2020, 2022). The nature of critical care work is to stabilise the person to survive, prepare the person to go to a step-down facility within the hospital or external facility, meaning that the patient moves out of critical care when they are not requiring intensive care and can be in a

rehabilitation or convalescing environment (Intensive Care Society 2022, Firshman et al. 2020). The critical care occupational therapists' interventions involved delirium management, seating management, splinting for the upper limb and upper limb maintenance and rehabilitation, ability to carry out activities of daily living (e.g., brushing teeth, using cutlery to feed self), cognitive assessment and intervention (e.g., orientation to date, day and time), sensory stimulation, and they take a family centred approach to their work (Intensive Care Society 2022, Firshman 2019).

Then there was a delay, as no research was allowed to be carried out due to COVID19. On 05-10-2021 the Research and Governance department of the site started the process of ethical approval, completed 18-11-2021. The staff participating in the research were given an information pack and consent form, so that they had opportunity to be informed of the research and have opportunity to ask questions which is good research practice for any persons volunteering to be research participants (NHS Health Research Authority (NHS HRA) 2019).

3.6.2. Recruitment of patients

The rationale for recruiting patients was that the SVM framework in the Check phase included that data were required before and after intervention from service users, and the service redesign is based on their feedback regarding the service (Seddon 2003, 2005), as it is an indicator of service effectiveness and quality (Doyle et al. 2013, Abbasi-Moghaddam et al. 2019). Regarding recruitment of patients, this was discussed with supervisors during supervision sessions, as the patients would have been discharged from critical care it was deemed ethical that the recruitment communications would be better for the staff to make and may in turn improve recruitment numbers, potentially. The approved protocol for the research study put forward that staff would recruit 6-8 discharged patients for the focus group interviews before and after the service improvement intervention. This was to reduce the influence of the researcher bias in selecting discharged patients from the occupational therapy service and commitment to do no harm as a researcher, as these patients were discharged from critical care wards. The researcher would only have contact with the discharged patients at the point of the group interview, and this interaction would happen over zoom, due to the COVID19 safety procedures of no

researchers on site. This biases recruitment of service users because only those with digital access will be able to put themselves forwards as a participant. The lead occupational therapist chose the discharged patients from the service, she sent 10 letters and then followed up with an email 2 weeks later for those that did not respond first time as it is useful to provide a reminder prompt to improve recruitment uptake. However, although recruitment through this method is deemed effective there is high risk of bias being introduced into this recruitment process (Preston et al. 2016), as the lead occupational therapist's choices maybe of patients that would elicit positive responses about the occupational therapy process. To reduce the bias, discussions were had between the researcher and the lead occupational therapists regarding to keep choice random. The lead occupational therapists felt she had to pick patients who were less likely to be mentally vulnerable after being in critical care. The HRA ethics committee did direct the researcher to update on the mental health act and be clear as to how the recruited patients would be able to access help if this was needed to be ready to support patient participants.

The information pack had information about the research and reason for contacting them, and also the consent form. Additionally, the information pack explained how support will be offered if the participant becomes distressed and the email contact of the researcher in case the potential participant had further queries.

3.7. Data analysis methods

The analysis was part of Phase two of the case study protocol (Table 3.3.). The timeframe for the data collection had been contracted from 12 months to 6 months due to the stop and start interruptions from the research site having to follow the COVID19 strategies, the increase in work due to covid patients and due to redeployment of the occupational therapy staff to other services within the hospital. The 6 month period of data collection was January 2022 to end of June 2022 for the study and compared to the same months' data in the previous years to maintain the variability of data during the same period in the year.

- i) Quantitative data analysis

ia) Monthly total of missed therapy sessions and staff sickness and retention data (Jan – Jun, 2019 – 2022), patient case allocation (Jan – Jun 2022), motivational questionnaire (before – after)

The quantitative data were descriptively analysed, and any changes discussed.

ib) For the data analysis for the motivational questionnaire, the guidance from the authors, Gagné et al. (2015), is that for each section of the questionnaire an average is calculated, and this was done before and after for each staff member and before and after results were compared. Gagné et al.'s questionnaire is based on the self-determination theory that motivation is conceptualised as multidimensional.

(see Appendix 6 for the questionnaire).

ic) Cost effectiveness analysis

The cost effectiveness analysis was to evaluate the cost relationship to occupational therapy staff hours for delivering patients' interventions. An incremental cost effectiveness ratio (ICER) was calculated. The ICER is a summary of the economic value of an intervention in comparison to an alternative (Drummond et al. 2015); in this study this was the service change after to before cost data for analysis. The ICER calculation from an organisational perspective, was in this study cost of occupational therapy staff time per service user (Chapel and Wang 2019). Cost of staff was referenced from the Curtis and Burns's (2018) 'Unit costs for health and social care' book, and information from the service's organisation's finance and business department was gathered by the manager/staff. Alongside this to provide further meaning to the data, a statistical analysis of their occupational therapy specific outcome measure, was going to be compared for years 2019-2021 collectively to 2022.

For the study the statistical analyses employed ANOVA as it can be used with parametric data with small samples (3+) of unrelated groups and small data sets (9+ data points) (School of Human Life Sciences 2006, McDonald 2014). The Tukey Kramer HSD (honest statistical differences) was applied for when inter group analyses was relevant.

- ii) Qualitative data analysis

The service user and staff qualitative data before the implementation of service changes, helped staff to identify the changes they wanted to implement for the service improvement. The analysis of the same data after helped to evaluate the impact of the service changes at the level of the service. The staff data was also collected during the implementation process to elucidate the staff's views of the SVM implementation process of service improvement. The audio was recorded on zoom due to face to face meetings being restricted due to the covid strategies of the organisation and research ethics conditions, the video recording was immediately deleted, then the audio was replayed and transcribed by the researcher. The transcription was returned to the participant to check for accuracy. Once the participant completed confirming the transcript then the audio was deleted. The qualitative data were analysed, by reading the text line by line, highlighting information that answers the research questions, then grouping words/terms /phrases into themes identified by SVM what enables and hinders the service, what was the defacto (real) purpose (the current existing purpose) and what was the actual purpose (the desired purpose for the service, developed from the evaluation of information gathered in the Check phase), but also any additional themes that were identified by the researcher (Pope et al. 2007).

3.8. Managing bias

As a lone researcher at every process of the research bias can occur, from the literature review to the findings analysis to discussions. If bias is not attended to, to reduce its influence, then there is a risk of harming the credibility of the study. Pannucci and Wilkins (2010) identify that the right question is not to ask if there is bias or not, but what was done to avoid bias in the research, as you cannot fully eliminate bias but keep it and its influence limited. The actions taken to reduce bias for this study were: the ethics committee scrutiny; the supervisory team's continued checking of the data collected and the data analysis, the writing and providing feedback; writing in a reflexive diary; and PhD peer support discussions. Table 3.5. represents the biases identified by the researcher and actions taken to reduce its influence on the study.

3.8.1. Balancing risks and benefits

Chapter 2 established the gap for research into service improvement in occupational therapy and chapter 3 the rationale for applying case study methodology to this research. The research aims to provide evidence for occupational therapists working in critical care in hospitals, on how to plan and organise themselves to deliver service improvement and potential measures to use to monitor and evaluate impact of service changes. This research will benefit both the current occupational therapy service and future similar services. Additionally, the research gave opportunity for both occupational therapy patients and staff to discuss their views, to inform of the benefit and challenges of the service to work effectively, to meet the demands of patient care. SVM framework enabled the staff to evaluate how to optimise service delivery, thus reducing the potential risks from the service to patients and enhancing the benefits for both patients and staff from the reimagined way of working. Table 3.5. is a summary of the risks and benefits analysis for the research and identified the actions taken to reduce/mitigate the risk, the responsibility was for the researcher to take action on these.

Table 3.5. A summary of the risks and benefits analysis for the research

Risk	**Risk reducing/mitigation actions**	**Benefit**
IT • security breaches data storage • technical mishaps data storage and zoom • human errors	Holding research information on London South Bank University's (LSBU) cloud OneDrive. Any data are anonymous and has no patient identifiable information. Any data emailed from the service to the researcher, is password locked. Practice with the zoom platform the day and evening before meeting, making sure the platform works from the	Holding information in place that is backed up by the university, so loss of information is low. Also have access to university IT helpdesk for assistance.

	researcher side. Print of the troubleshooting page from zoom site, in case there are issues for the participants. If participant is completely unable to attend and still wishes to contribute make a 1-1 appointment. If zoom completely fails on the day try and rearrange another date.	
Sole researcher • human errors • sole researcher bias	-Keep reflexive diary -Have regular supervision to check to gain feedback on performance and written work to discuss actions and reflections -get participant checking for transcripts	-Support critical reflexivity -Control of variability in research process. -One person responsible decisions. -One point of contact.
Hard copy of consent forms • theft • human errors	These are kept in a locked draw of the shared office of the lead occupational therapist at the research site. The lead holds the key.	The service users have confidence that the person holding the consent form is someone they know and trust.
Service user participants involved in the research • no uptake • responder bias • Become unwell • Become distress • Excluding those who do not have technology to join on zoom	To reduce no uptake the lead occupational therapist is sending the invitation letters out and following up after two weeks if the person has not replied. The invitation pack will have an easy to read participant information regarding the research, their involvement and their rights. To reduce responder bias, ask open and not leading questions. Asked supervisors	The benefit to service users is that their voice has influence to shape the changes for the service improvement for those that participate before any changes are made to the service. For the service users that contribute after changes are implemented their voices will help to evaluate the impact of the changes and potential for further changes. All service users will receive a summary

	to check questions and prompts for the focus groups. Ethics committee checked the questions and no comment provided. If the person becomes unwell, assess the situation. If person is unwell, firstly suspend the group zoom session and advise the other participants that the researcher will be in contact to rearrange another date. On discussion with lead occupational therapist action choices when participant becomes unwell: i) the person call their GP or 999 if they are able ; or ii) If the person is unable hen researcher will call 999. For both situations the researcher will contact the lead occupational therapist to inform her of the situation. If the person becomes distressed, assess the situation. The action choices: i) temporarily suspend the zoom and give time for the person to recover, then if they wish return to the zoom focus group meeting, ii) enable the person to leave the session providing them with information of where to seek help, e.g., advising they contact GP, and if they still want to be part of the research arrange a 1-1 at a later date, and continue with	of the research in form of a poster. Gaining insight into the service users views of the service in SVM evaluation is core to understanding the current enablers and barriers for effective service delivery. This reality is compared to the perceptions of the occupational therapists of the service to then create changes that benefit both. By being on zoom reduce the chance of COVID19 transmission to others from participants.

	the other service users; iii) suspend the group zoom session and advise the other participants that the researcher will be in contact to rearrange another date, stay with the distressed person and contact the person or service that they wish to get in touch with. For all situations update the lead occupational therapists. As part of the recommendations from HRA Ethics the researcher completed an update of the mental health act. By including just zoom it is narrowing the pool of variety of potential participants. However, during COVID19 pandemic restrictions it was a safe way to access participants.	
Occupational therapy service staff participants involved in the research • Resistance • Staff sickness due to covid	Provide participant information pack and consent form. If there are therapists who do not want to be involved, then on discussion with lead therapist the research can focus on wards of consenting therapists. This will not be unethical as the patients will be receiving treatment as usual from the occupational therapy service. Regarding staff not being able to be at work due to covid, the	The core of SVM is that the people delivering and receiving the service their voices must be heard to shape the changes for service improvement.

	researcher will keep in communication with lead occupational therapists and supervisory team to problem solve.	
Researcher working remotely with research site due to covid strategies	SVM requires that the person supporting the staff through this service improvement process see the staff in real time carrying out their day to day work. Due to covid safety strategies this was not possible, however, through the service evaluation with staff some of the day to day job was discussed and from their reflections and evaluations and this helped to enter into discussions regarding enablers and barriers.	The benefit is that the researcher can continue with the study without the necessity of being on site.

In essence in the context of the guidance and principles of ethical practice and standards as set out by the NHS HRA (2021), that it is the responsibility of the researcher to ensure the safety and care of all participants within the study. This must be clearly outlined and what actions taken to reduce harm/distress and what will be put in place for participants. This shows that the researcher has taken due care and paid attention to the risks, that is being responsible to look after the participants.

3.8.2. Reflexivity in Research

It must also be borne in mind that the research process could cause discomfort and inconvenience felt by the patients and staff. The researcher must check in with themselves through reflexivity (see Chapter 7 on researcher reflexivity), how the power position as the researcher may impact on the participants and what they contribute to the research (Dennis 2014). This links back to bias too in that the people who participate are a sample of the motivated ones willing to engage, but they are also potentially putting themselves in a vulnerable position by coming

forward (Labott et al. 2013). Labott et al. (2013) advises that this is about distress reduction and prevention by understanding this issue that could arise for participants. Research actions put in place to reduce distress were:

-making sure the participants were able to contact the researcher with any questions before signing the consent form, before attending the interviews and after the interviews to answer any queries. In the letter and the PIS, the participants were provided with the researcher's email;

-making sure to leave time to 'decompress' from being a research participant and to chat about anything else or for participants to ask any questions after the group interview or 1-1 interview completed (Labott et al. 2013). As part of the introduction to the focus group this was part of the discussion content for the focus group attendees and;

-identifying with the lead occupational therapist where the participants could get support if they became distressed, and providing the information as part of the introduction to the focus group this was part of the discussion content for the focus group attendees. Information is also put in the PIS as to what will happen if the person becomes distressed during the zoom focus group session.

Researcher reflexivity will be discussed in detail in Chapter 7. It is important for a researcher to understand and keep check on how their experiences and assumptions may be influencing the research, as being aware of this the researcher can take steps to reduce its interference with the research process and outcomes (Roddy and Dewar 2016, Faisal 2021). The steps taken by the researcher in this PhD study:

-The researcher made sure that for each interview transcript analysis they followed a process as identified in the data analysis section in this chapter,

-Regarding the research made sure to keep fieldnotes to keep checking the process was followed and when the researcher felt they had reviewed their influence on the process,

-Discussed process and outcomes in supervision,

-For the thesis included a research reflexivity chapter.

3.8.3. Rigour in Research

Rigour is sometimes seen as interchanged with trustworthiness in qualitative research, both are regarding the quality and validity of the research (Guba and Lincoln 1994, Klem et al. 2022). Rigour is described metaphorically as the safety inspection after the building is up (Klem et al. 2022); there is not one size fits all for rigour as several epistemologies can be applied as long as the researcher attends to the internal alignment between the method and chosen epistemology (Takahashi and Araujo 2020). Klem et al. (2022) use the metaphor of a safety inspection of the build, the structure of a building is dependent on the quality of the build, which is assured through the transparency of the decision making/rationale of choice of materials and how the materials are used to build the structure. Hence rigour is achieved by transparency, so others can follow decision choices and reasoning for the methodology, design, process, outcomes measures and data analysis. Also, how the research demonstrates ethical and good practice standards within a particularised context/s.

There are many established writings on the rigour of qualitative case study research, such as Guba and Lincoln 1994, Ballinger 2006, Creswell 2013, and Baillie 2015. But Yin (2018) appears to be singularly a current author considering rigor for single case study design with mixed data collection. The concerns for rigour regarding case study are because it is being judged from the hegemonic normative dominating position of quantitative research rigour. Guba and Lincoln (1994) identify rigour in its traditional quantitative form and translate this to meanings for qualitative research (see Table 3.6.)

Table 3.6. Interpretation of rigour in case study research with mixed data collection

Quantitative research rigour (Lincoln and Guba 1994, Yin 2018)	**Meaning of rigour for single exploratory case study mixed data collection (Yin 2018)**	**Qualitative research rigour (Lincoln and Guba 1994, Amankwaa 2016, Connelly 2016)**
Construct validity – identifying and aligning relevant operational measures for concept/being investigated	Multiple qualitative and quantitative data sources. PhD supervisors checking written work.	Credibility – confidence in the truthfulness of the study and its results.

Internal validity – only for explanatory case studies as research is looking for causal relationships	Not relevant for exploratory case study	Credibility
External validity – showing generalisability of findings	In singe case study demonstrating this through the theory	Transferability – outcomes can be applied to other contexts/settings
Reliability – the study can be replicated resulting in the same or similar outcomes	Applying the case study protocol and keeping a record of events/evidence time and date stamped	Dependability – repeatability of the findings
Objectivity – demonstrating degree of neutrality in the research	PhD supervisors checking written work. Transparent and explicit how researcher bias influence is limited.	Confirmability – degree to which outcomes are due to the participant and not researcher biases

Rigour will be maintained as long as there is alignment between the research question, the chosen epistemology of pragmatism and the case study method, as it commits the researcher to identify the operational data that works with the phenomenon under investigation. Amankwaa (2016) identifies a protocol of actions to establish rigour in qualitative research that could be applied to promote case study rigour (see Table 3.7.).

Table 3.7. Protocol of actions to establish rigour interpreted from Amankwaa (2016)

Qualitative research rigour component (Lincoln and Guba 1994, Amankwaa 2016, Connelly 2016)	**Actions for single case study**	**Explanations (Baillie 2015)**
Credibility – confidence in the truthfulness of the study and its results.	Debriefing with supervisors, participant checking, reflexive diary	Debriefing provides opportunity for challenging the researcher and also space to for supporting.
Transferability – outcomes can be applied to other contexts/settings	Rich descriptions, reflexive diary	Rich descriptions is regarding detailed descriptions of the research setting and participants, to enable the readers to come to a decision

		whether the findings could be transferred to other contexts/settings
Dependability – repeatability of the findings	Audit trail	Keeping a log of chain of decision making and events
Confirmability – degree to which outcomes are due to the participant and not researcher biases	Reflexive diary	Reflexivity enables the researcher to explore and interrogate their influence on the research.

In this research study many steps were taken to ensure rigour, from explaining rationale for the study in chapter 1, to the literature review in chapter 2 through to the methodological considerations in this chapter, and the findings and discussion analysis in chapters 4 and 5 respectively. These actions showed the auditability of the research which is an important part of demonstrating rigour (Sandelowski1986). Being transparent and critical about the research action, challenges and decision making demonstrated creditability of the research (Gibbert and Ruigork 2010).

3.9. Chapter 3 conclusion

This chapter provided a rationale for critical realism being the ontological position to address the research aim and the question. Critical realism pushes against the normative framing of research as positivist or interpretivist and offers a pluralistic stance to frame the research. In essence, critical realism is a meta theoretical reflexive stance that informs empirical research, through 3 interrelated components: the data from the research, the theories we use to understand and explain the data and theories behind the theories. Applying the epistemological approach of pragmatism for the research aim and question, to provide a framework within which to explore whether the desired outcomes identified are possible within the particular context of the service improvement study. Furthermore, pragmatism gives value to the different types of data that can arise from the study to inform the performance of the service, which supports the assertion in chapter 2 that staff delivering service improvement is a complex problem.

Identifying a clear methodology or method is subject to the researcher's reasoned preference, their knowledge and skills, and the research aim and question. Hence

there is not a definitive answer but a need for the researcher to be explicit in their decision making. Research of phenomenon that can occur as part of the everyday goings on of work, such as service improvement, is complex. Complexity means there are multiple interacting components influencing the service improvement process and outcomes within the specific context. Case study methodology was the best fit for this empirical research because the research question was asking a 'how' and 'why' question, enabling the complex nature of service improvement to be explored and represented through mixed data collection, and aligned with the critical realist position of what works for who, how and why. Essentially the case study approach, for this study would elucidate the decisions for actions by critical care occupational therapy staff in the process of improving their service, why they were taken, how they were implemented and what outcomes are impacted.

Chapter 4 Findings

4.1 Introduction

This chapter will provide the outcomes from the statistical analysis and the key themes that were identified from the qualitative data. The raw data provided in the Appendices. The chapter will be organised to follow the 3-phase cyclical process of Seddon's Vanguard Method (SVM), Check, Plan Do service improvement framework (see figure 1.2.).

The occupational therapy service that agreed to be part of the research was based in a critical care unit in a hospital in England. The service had a lead occupational therapist at grade 7 who is part time, another part time grade 7, a new full-time grade 7 on critical care wards, and a grade 6 who is split between critical care wards and other wards. In November 2021 the other part time grade 7 occupational therapist moved to a position in another hospital to set up a new CCU OT service. The whole research was delayed by the COVID19 national strategies and the fallout for the public sector post lockdown, that affected the organisation that the service was in.

During the audio recording of patients and staff, every person was asked to choose a colour as their pseudonym of choice in the audio recording, to maintain confidentiality and their anonymity.

4.2 Check Phase

This phase is evaluating the service as it is currently from the perspectives of stake holders (qualitative data), and operational data and run charts (quantitative data) to demonstrate the pattern/trends in the current service delivery activity/ies. The data usually help to map the service processes end-to-end and, help to understand the current state of the service in terms of meeting the service users demands. The SVM process states that any changes that are made to the service are based on the data identifying the needs of the service users to shape the service. The information found in this phase helped the staff to decide on their focus for the changes they wanted to implement to improve the CCU OT service for the service users.

4.2.1. Qualitative data

The qualitative data has been collated in the form of themes from interviews evaluating the CCU OT service, pre SVM implementation, with patients (Mr Yellow, Mr Grey) and CCU OT manager (Ms Orange), and service evaluation focus groups with CCU OT staff (Ms Blue, Ms Purple, Ms Green, Ms Red), continuing the anonymity of the patients and CCU OT staff. SVM states that the changes are directed by the demands on the service from the service users (Seddon 2003, 2005).

4.2.1.1. Mr Yellow and Mr Grey critical are patients who received occupational therapy before implementation of change

Interviews were with two discharged patients to evaluate their experience of occupational therapy in critical care services, Mr Yellow, and Mr Grey, these were separate interviews, as opposed to a focus group. The intention was to gather 6-8 discharged patients from critical care who had received occupational therapy. But after two cycles of attempting to recruit, only two discharged patients put themselves forward, but could not do dates that were convenient for them to join in one group interview. Hence, each patient was interviewed separately. After the interview events both were emailed the transcript from the interview, and asked if they would check for accuracy and whether they could approve the transcript. They identified no changes and approved the transcript. They also had a choice as to whether they would like to receive information of the end outcome of the research in a poster format, and both agreed for the researcher to hold on to their emails so they could be sent the poster.

Summary of comments were identified in relation to asking the discharged patients of their experience of the CCU OT service. It was a summary as it was not possible to identify themes with two patient interviews. But what they did not explicitly or specifically identify was occupational therapy, or as to what the CCU OT service had provided for them.

Both Mr Yellow and Mr Grey felt a sense that the critical care service took care of them with dignity and was preparing them to get ready to leave critical care through learning the required skills. They both referred to getting back on their feet and being

able to move/mobilise to get ready to go home, and that their personal needs were being met while on the critical care wards. Both indicated that what made their stay in critical care manageable was that the staff treated them like family, kept their family updated about them and their progress, and they like to have continuity of staff that worked with them. The only criticism and that was from Mr Grey was that when therapists came it was not always the same person. Both did not specifically mention occupational therapy or therapists.

Example quotes:

Mr Yellow *"They was around me all the time you know of everyday. They made sure I go to try and move my fingers try and move my toes and things like that. And giving me things to handle like I remember them giving me large Lego pieces just to play with and things like".*

Mr Yellow *"While I saw them every day it was kind of like a family kind of atmosphere".*

Mr Yellow *"I find the service I was given personally was excellent. I cannot fault it in any way. I was treated with dignity and respect".*

Mr Grey *"They made sure that I got up and moved about or got me up to move about. They got me using walking frames and umm making sure that I was safe."*

Mr Grey *"The only thing I can think of is sometimes when you were doing the like rehab like while trying to walk and that, you wouldn't get sometimes continuity of the same people."*

4.2.1.2. CCU OT Manager perspective

In summary from the interview with the manager, Ms Orange, the feedback was; the history of professionals in the CCU traditionally, the struggles she has had with trying to improve staffing levels which could happen easily if she was able to have a direct link to the staff and reduction in length of stay in critical care or use a different measure that would still work for funders, CCU OTs being taken away for bed flow (facilitating discharges to unblock beds), the challenges of the lead occupational therapists not having capacity to train the allocated occupational therapy staff to improve the real hours for patient treatments, other professionals not understanding

what occupational therapists do there and why it belongs in critical care, and the uniqueness of the occupational therapy staff to deal with patients with delirium and cognitive problems.

"whole element of cognitive rehab about mental health delirium management that we would never have been involved with 3 or 4 or 5 or 6 years ago whereas OT can bring that bring that to the service."

"the nurses have no idea what OT is doing in CCU. They have an idea what physios do but OT was a completely different domain for them really."

"So the barriers would be upskilling staff appropriately to be able to meet the needs of the patient In our team at the moment we probably only got two part time OTs who would be competent to do all that…..So I think we have the idea of what we want to do and we have the paperwork all sorted it is just the workforce that we don't have in place with all the right skills."

"And I try and keep them as much as possible in critical care But there are times when a discharge from hospital trumps the critical care patient."

"If we can show that having OT or physio or whatever down there reduces length of stay or reduces ventilation days [outcome measure] then you've got something that will be that the trust will go oh ok that will be good money saving we'll invest in that."

4.2.1.3. CCU OT Staff evaluation of current service

SVM directs that the staff must be given time to bring their voice to the change, to know that they can be open and feel safe to do so, because the people who know best about the service are not only the people experiencing the service, but also those that are delivering the service (Zokaei et al. 2011). In relation to the example quotes to evidence the themes from the CCU OT staff focus groups, the staff requested that their pseudonyms not be assigned to their job grade positions in the CCU OT service, as they felt the people in their workplace would be able to identify

them easily if that was done (de-anonymise them). The researcher agreed to this. There were three evaluation discussion sessions with the CCU OT service occupational therapy staff, before the plan phase. Each theme will be evidenced with 4 supporting example quotes at most where available.

Themes from service evaluation discussions 08-09-2021 with CCU OT Staff

Themes identified from the first evaluation meeting, attendees Ms Blue, Ms Green, Ms Purple. Overall, the themes were showing that participation in the SVM check phase gave them opportunity to:

-have discussions regarding the processes in the service delivery path, for staff to elucidate the impact on service users from their current way of delivering service;

-for the CCU OT staff to explore the way they were working and what is missing as part of the service delivery;

- have discussions regarding the processes in the service delivery path for staff to elucidate the impact on their own work.

Theme: Current purpose of the CCU OT service

The participants were clarifying with each other what was the purpose of what they were doing as a CCU OT service. They could not articulate what is occupational therapy in general. There was a tendency to describe their purpose broadly in terms of physical function or impairment.

Example quotes:

Ms Purple *"I think it is to assess change in the patients function and identifies impairments that need intervention, that may improve the patient's function".*

Ms Green *"it's trying to maintain what they have and not, trying to reduce the chances of it worsening especially when they are so unwell".*

Ms Blue *"that could also apply to physical impairment or like an anxiety or delirium".*

Ms Blue *"Trying to bring some humanisation".*

Theme: Current CCU OT job involves

They discussed aspects of the occupational therapy process (including identifying assessment and outcome measures), types of meetings they had to attend, how they promoted CCU OT service, and early on the staff identified that they were not interested in the end to end process of the service delivery as they did not have any say in the discharge as that was a medics decision. The latter is out of step with the SVM process, as in the literature one of the recurring measures is the end-to-end process, either in focussing on time to complete or number of steps involved, and evaluating if change has occurred here. The participants were clarifying and identifying the component features of what they did in general as part of the work roles and responsibilities. There was focus on both when working on the critical care wards and other wards, and the differences in what they do in the different wards. The discussions on this difference were initially placed as a separate theme, but on reviewing it did fit into this theme as there was a lot of crossover discussions.

Example quotes:

Ms Blue *"sometimes it's identifying risks of patients developing symptoms of certain conditions like delirium, who's at risk of developing those throughout their stay within the critical care unit or the hospital".*

Ms Green *"But I am placed more on the wards, but I can see a very distinct difference. I think CCU you can't just do d/c planning you can't just work on equipment as they are not at that point".*

Ms Blue *"That's not our that's a medical decision…We don't have any say really in their discharge from critical care".*

Theme: Challenges for CCU OT staff

The participants discussed that they felt that there were a lot of missed sessions with patients documented, they felt because there needed to be more staff allocated to the critical care wards. They don't see the patients as much they feel they need to due to staffing level constraints. All CCU OT staff had to pitch in with managing the

hospital bed flow to discharge patients as priority, their role in critical care was not ring-fenced. There have been long-term vacancies not filled, as exampled by the quotes, which are predominantly from Ms Purple. There were discussions on the difficulty of proving occupational therapy works in critical care and not having an occupational therapy specific outcome measure.

Example quotes:

Ms Purple *"Hadn't filled the post for a long time. Difficulty filling the post".*

Ms Green *"Although critical care is a priority. If patients are not having input for discharge for home* [on other wards] *that is probably going to be seen by the higher up as more urgent as then your blocking beds and poorly patients then need those beds".*

Ms Purple *"And it's the same for all of Blue and I have to often get called from critical care to help on the wards for discharge planning".*

Ms Purple *"At the moment we don't use a formal outcome measure for OT. It's more just it might be that we use a standardised assessment to show a change in a particular aspect of the patient such as cognition or mood".*

Theme: The occupational therapy work is person centred

The participants discussed that what they do as occupational therapists is in keeping with being person centred.

Example quotes:

Ms Green *"But there is still a big part of our process which is getting some of the background information that you know what is important to that person".*

Ms Purple *"treating what is relevant to them".*

Ms Purple *"It puts that rehab and recovery into a meaningful context to the patient".*

Theme: What happened during pandemic

The participants reflected upon what the work was like for them during the pandemic.

Example quotes:

Ms Green *"I think this whole 2 years of the pandemic that's had a big impact left an impact in terms of that, people's roles have been switched because they're having to treat I guess majority of patients being on hold because covid".*

Ms Blue "*With the covid hiatus in the middle of it"* [trying to re-establish the service].

Ms Blue *"I wonder if that was precovid we were quite we were presenting cases we won AHP of the year for the service you know we were umm that was sort of really pushed umm there was lots we did audit didn't we and those kind of things".*

Themes from service evaluation discussions 15-09-2021 with CCU OT Staff

Themes identified from the second evaluation meeting, attendees Ms Blue, Ms Purple and Ms Green. From the identified themes it appeared that the SVM check phase was engaging staff to reflect on current work practices, clarifying what they did do and what supported what they did.

Theme: Current CCU OT job involves

The participants were clarifying and identifying some of the component features of what they did with patients as part of the work roles and responsibilities.

Example quotes:

Ms Blue *"That would be part of our main treatment method. So if patients, for example can only sit up to brush their teeth and that was how you'd reorientate them or their delirium, then you might most likely go down functional I suppose by functional it could mean a wider criteria of things".*

Ms Purple *"yeah you're limited in what functional tasks in that the environment, so usually it would be personal care wouldn't it or leisure type activities essentially as well".*

Ms Green *"They* [patients] *have a lot of things going on with their limited function which probably means that the more focus on personal care and ADLs is removed when that's not appropriate treatment at the level they're at, and that may be because of covid we have a lot of patients that have been unwell so that might have had an impact on how frequently you can do that treatment if that makes sense".*

Ms Blue *"you have to do impairment based assessment the comprehensive assessment so you have to run you have to go through all the page. I've just done a whole ward of it looking at their impairment, so you have to write goals set against those impairment so things like inability to wash and dress or fatigue and that those kind of things. So, our whole goal setting approach through the nice guidelines is impairment based".*

Theme: CCU OT work is evidence informed

Ms Blue was clarifying and identifying that their work was evidence informed.

Example quotes:

Ms Blue *"maybe we're not explaining ourselves very well I think what you're what the literature says is what we try to do is that".*

Ms Blue *"I think also we look at the guidelines we have do like for the nice guideline the CG* [clinical guidance] *83"* [The guidance involves "rehabilitation strategies for adults who have experienced a critical illness and stayed in critical care" (NICE 2023, p.4)].

Theme: Challenges for CCU OT staff

The participants discussed the challenges they face in explaining occupational therapy in critical care.

Example quotes:

Ms Green *"I feel that one of the biggest issues has been trying to not sell OT but trying to make it clear what our purpose is. Trying to make sure that people understand that, and ultimately because if you try and making more patient focussed sometimes that language is not always understood isn't always easy to describe so maybe because we use more corporate facing language to make the MDT aware that maybe, that could be the argument of with that we're trying to, like the reason why we've got this role here is that we handed a business case to prove that this is a service we need, and we recognise that we're trying to sell it to people to recognise its value. But then you can argue that there is that disconnect that side of it and another when we are speaking to patients that isn't language they want they want us to be personalised actually that".*

Ms Green *"We are not naming what it is right now"* [explaining what the purpose of the service is].

Ms Blue *"We are not good at expressing it"* [explaining what occupational therapy & what the purpose of the service is].

Theme: Developing a new purpose

The participants discussed why and how they need to develop a new purpose that is not impairment focussed but relatable to occupational therapy. This is in the SVM literature whereby the process helps to clarify the actual purpose that the service should be delivering.

Example quotes:

Ms Green *"I think on the wards there's a difference between the purpose we're utilised for and the purpose we might like to do".*

Ms Blue *"I think it's been really helpful you challenging us as a group of OTs we're kind of self-led and this apart from kind of doing other stuff from other units or check on us. Actually, we haven't any challenge to our service or challenge to our thinking at all and I think it's what we've been looking for".*

Ms Green *"It's kind of like maintaining function through meaningful occupation".*

Ms Purple *"Even after our last session we did last week I felt like I was thinking more from the patient's getting the patient's perspective on things. Even though I thought I do do that in my practice. I can't even explain to you what I would have done differently with that patient same patient before we had that session. Something changed and I don't know if it's because I have changed".*

Theme: Occupational therapy identity

The participants discussed the challenges to their professional identity/professional identity forming/establishing as occupational therapists in the critical care unit.

Example quotes:

Ms Blue *"I think there is something about every OT expressing what they do to others. That is so inherently difficult and I don't know why I think it is that for the profession, that it's just. It's so different no one understands what they do I think even OTs sometimes struggle".*

Ms Purple *"Yeah I feel it's clicked a little bit ….. Like yeah I see what you mean now. Because it is like our identity isn't that professional thing it's more personal and patient facing that's how we practice and work and So why not just communicate in that way and yeah".*

Ms Blue *"I was just going to say I wonder, like some of that, because there's only so few occupational therapists in critical care and so many in physios. In some ways it's very difficult to be different because you're trying to fit in with the therapy team so you're approach, my approach is very different to a physio approach. But you're one voice out of 30 physios …….. You want to fit in with the team so you want to have that medical approach to understand about ventilation talk about that and the rehab and how we're trying to improve strengthening core".*

Ms Green *"sometimes on the wards that side of rehab is not always as possible"* [referring to being able to do activities-based intervention].

Themes from service evaluation discussions 29-09-2021 with CCU OT staff

Themes identified from the third evaluation meeting, attendees Ms Purple, Ms Green, Ms Red and Ms Blue. Overall, the themes identified from the SVM check phase had enabled staff to put a critical lens on their work, teasing out the problems and the impact on their work, but also what they are doing that is working.

Theme: Challenges for CCU OT staff

The participants discussed the challenges they face in delivering occupational therapy in critical care.

Example quotes:

Ms Red *"Supporting other teams so pulled out"* [of CCU OT service].

Ms Blue *"Our teams quite top heavy with band 7 so some of our time is taken up with other* [duties]*. We are quite involved in quite a few projects".*

Ms Blue *"we haven't got the staffing to treat everybody".* Ms Red responds later *"Yeh I mean it's a lot to cover really",* Ms Blue adds, *"Ms Green's not actually working in critical care at the moment".* Later Ms Green adds, *"So within the team we have assistants……I feel they are predominantly used by the physios".*

Ms Blue *"You know and write it all up takes about an hour and a half or so on average I would say"* [writing notes per patient].

Theme: Occupational therapy identity

The participants discussed the challenges to their identity/ identity forming/ establishing as occupational therapists in critical care.

Example quotes:

Ms Red *"You lose yourself in ITU* [intensive treatment unit] *don't you."*

Ms Blue *"Be in different meetings And I think you know if we're not in these meetings like the senior leadership meetings on critical care if we're not there then they wouldn't know you, you have to keep consistently being there and being at the mdt* [multidisciplinary team] *and being at these senior meetings, to put OT points across. I think it'd be easy to say well I'll I'll go and treat a patient instead. I think the long term aim is that you're a valued member of that senior team and you're bringing up points and your inputting you make yourself indispensable."*

Ms Blue *"But if you're not there and you don't input I think you need to be there, and sometimes you don't have a lot to say to input, but the presence of being* [there] *you know is really important. But that then takes two hours out of your day every other week."*

Ms Purple *"I think it's quite generic when I looked at the content. It's not so much about an OT teaching you what to do in critical care it's more about the* [MDT] *team I don't know what"* [training for CCU OT staff by externals].

Theme: Reflecting on their current purpose

Ms Purple's comments dominate the exampled quotes here, discussed why and how the current purpose content is problematic in relation to occupational therapy.

Example quotes:

Ms Purple *"No I think it's just it* [referring to current purpose of CCU OT service] *feels like thinking back on it now it does feel really clinical I don't know*".

Ms Purple *"Yeah I think that. Especially that first bit. We kind of captured that essence of OT. But then actually when you think about the presentation now I don't know. It's quite, looking back on that now I feel that we could actually probably actually do it in a more I don't know, present it in a, make make it a different sort of thing. Hard to explain".*

Ms Purple *"Yeah it probably doesn't reflect how we have evolved over that time doesn't it".*

Ms Purple *"Yeah Yeah I think it kind of makes more sense now. It really helps to having you [the researcher] as the view from outside makes us meet to see together what's going on and where the gaps are with you, it's not even gaps is it? Oh yes where the gaps and how to kind of fix those a little bit".*

Theme: Promoting occupational therapy

Ms Blue's comments dominate the exampled quotes here, discussed why and how they need to develop a new purpose that is relatable to occupational therapy, and other professions and valued by them.

Example quotes:

Ms Blue *"The other thing we did was that we put up some boards didn't we in in a mdt, right at the beginning and it just had kind of different things about occupational therapy on it, and* [we] *bought some cakes and biscuits and staff and as the nurses and whoever had 5 mins they came to meet with us, and talk through our role and have a piece of cake. We introduced ourselves and and kind of the purpose of occupational therapy was. So we did that as well as a meet and greet at the beginning….A bit of a low key introduction".*

Ms Blue *"Yeah part of the presentation, like part of that is that we were teaching on the East of England nursing preceptorship postgraduate like ICU course. It had to be really, that presentation had to be really obviously some of the bits were the same in it. That had to be really evidenced didn't it. It had to have learning objectives and everything is referenced and literature based and all of that So umm yeah it's different from kind of I think".*

Ms Blue *"I think the long term aim is that you're a valued member of that senior team and you're bringing up points and your inputting, you make yourself indispensable in a way".*

Ms Blue *"I think we just we were really introducing the critical care group to the OT pillars I've written alongside an OT in Wales which is part of the ICS kind of AHP framework about how you'd develop yourself as a critical care OT".*

Theme: Guideline/guidance for CCU OT service

Ms Blue only mentioned documents/literature that provided guidance for CCU OT work.

Example quotes:

Ms Blue *"RCOT have their own development pillar. The ICS wrote an AHP pillar which is quite generic that you can look at it as a self-grading tool essentially. You can say I'm foundational level in whatever area in critical care. Then you tick and use it in your appraisal. Would kind of help yourself develop each specific speciality is than writing their own pillar from that".*

Ms Blue *"I think in the guidelines there are stipulations you have to have a lead occupational therapist with the experience and skills working in the environment and teach others".*

Ms Blue *"But ours is 0.23 per bed but that's a recommendation But I think the physio one don't quote me on it is a standard ours is a recommendation And it's based that's why I've been doing this systematic literature review is trying to look at what the bed base you know what the rationale is behind the staffing levels".*

Theme: Current CCU OT job involves

The participants were reflecting on their work roles and responsibilities.

Example quotes:

Ms Purple *"I think like probably when I look at myself as a practitioner obviously being new in critical care as well at that time, perhaps at that time it was very much we can do interventions in seating, upper limb, cognition mood there were set aspects of the patient [unclear on recording]. But as times gone on like we probably used a lot, like this is my document where we've collected that information about the patient a lot more I would say now from my point of view".*

Ms Green *"Also if you strip back OT to barebones kind of motivation is probably one of our most important factors of why we do our intervention participate with what you're doing with them".*

Ms Blue *"I think that's an important point as well because, but when you're talking about looking at the environment look at the things that will motivate them, but also managing things that will demotivate them".*

Ms Purple *"I think more sort of FIM FAM Barthel, they're those sort of functional type of measurements. But I think generally they seem to* [not be for OT]*. There are other ones they use like GAS the TOMS* [for OT]".

Theme: The occupational therapy work is person centred

The participants discussed how their work was person centred.

Example quotes:

Ms Red *"trying to get that framework and that profile of that person to get to know that person".*

Ms Purple *"Yeah speaking like with the family and involving them as well".*

Ms Red *"Motivation is kind of most important factor and something we have to kind of encourage patients".*

Ms Red *"Because obviously in that environment there is such a massive kind of feel of loss of control You know absolutely lost control of everything. And so to rediscover that person and what's important to them and actually trying to give back to them as much you can of themselves. Trying to find those motivating factors both intrinsic extrinsic the social environment All of those things kind of help".*

Theme: Current paperwork

Ms Blue reflected on their paperwork being person centred and understanding the person from multiple points.

Example quotes:

Ms Blue *"So I supposed we'd start with information gathering phase. We've got the new document that we sort of took from, I think it's like from one of the dementia paper works, but I've swapped how some of the questions were asked. So, it asked things like important people in your life, what roles and you know what's important, what you enjoy".*

Ms Blue *"I think I was trying to look at it, instead of getting an initial interview which was really based around the environment which was what the other OT initial did. I was trying to get it centred around the patient and their kind of behaviours and volition really, to try and understand the patient more than I guess how they function in their environment".*

Ms Blue *"The paperwork is kind of more asking their premorbid functioning Looking to gather the most you know the information that is going to help you engage them in rehab".*

4.2.2 Quantitative data

The qualitative data informed the quantitative data collected for sections 4.2.2.1. The quantitative data collected and collated for section 4.2.2.2 to 4.2.2.5 was informed by the scoping literature review.

4.2.2.1. Patient data and run charts provided an understanding of the baseline of service performance

The lead therapist provided information on thirty patients each year from 2019 to 2021, (see Appendix 9 for tables 4.1 (intervention information), 4.2 (missed session data)). The number 30 was decided upon by the lead occupational therapist as being a manageable number of patients to identify given her workload. The data in tables 4.1 and 4.2, were used to develop the run charts (see Appendix 10 for all run charts figure 4.1 to 4.4.) in the section 4.2.2.2. The missed sessions were important for the lead occupational therapist to identify as this was one area that the staff wanted to improve on, and these were included in the tables.

When adding the total of the number of intervention sessions provided and the number of missed treatment sessions regarding the CCU OT service occupational therapists, overall, 59% of the CCU OT intervention sessions were missed over the years 2019-2021, using average data from 30 patients for each year.

From the information of the tables on the categories regarding missed sessions for CCU OT service (see Appendix 9 table 4.2), 57% of the missed sessions was attributed to resources, the lead occupational therapist explained that this in the main is because of staffing issues/shortages.

The data were also tabulated for each of the years 2019-2021 for the total missed sessions for the six months, Jan to Jun, that the research was implemented was noted for collating the missed data from 2019-2021, to try to keep the conditions of variability similar for the different years with the research timeframe of Jan-Feb of year 2022, (see Appendix 11 table 4.3).

4.2.2.2. Run charts

SVM process suggests evaluating the pattern/s of working with reference to run charts to evaluate when the service may be behaving out of normal pattern (special cases) and identify possible causes. Special cases are points that are interrupting the normative pattern of run of time. Hence these special case points need to be explored to gain an explanation as to the possible reasons for its occurrence. Every time a special case was identified, discussions were had with the lead occupational therapist as she collated the data and would understand the cause of the special case. For reliability it is best to have more than ten points (Perla et al. 2011), and the 30 patients each from years 2019 to 2021 were identified by the lead occupational therapists, providing the data for the run charts. Run charts capture normative and differing work patterns/trends graphically over time and within upper (UCL) and lower control limits (LCL). The UCL or LCL is calculated by adding or subtracting, respectively, three times the standard deviation from the average of the data set. Most of the data of run charts should fall in between these limits forming a regularising work performance pattern and help with identifying any special cases that deviate from their regular pattern (NHS Improvement 2011). The data for run

charts does not necessarily have to be normally distributed (Wheeler 2000). The subject matter for the run charts was developed from the evaluation of the CCU OT service staff discussions pre the SVM planning and implementation. The special cases identified in the run charts (see Appendix 10 figure 4.1 to 4.4) were developed with reference to the NHS England and NHS Improvement's (2017) document on run charts.

The run charts were developed on 4 areas, and the special cases were in the main points of astronomic shifts, a point that lies above the upper control limit line, (the charts (figure 4.1 to 4.4) can be viewed in Appendix 10):

***-Number of days from referral to 1st contact date 2019 -2021 in critical care occupational therapy services, for the 30 patients*.** There are two astronomic shifts in year 2019, that was due to staff shortages (figure 4.1).

***-Number of days from date of 1st contact to discharge 2019-2021 in critical care occupational therapy services, for the 30 patients*.** There are two astronomic shifts one in 2019 the other in 2020, it took longer to see the patients after referral because of staff shortages. Lead occupational therapists identified that staffing issues contributed to the length of time from 1st contact to discharge. Additionally, one of the patient's was a complex case and needed more therapy time too (figure 4.2).

***-Number of treatment sessions till discharge date 2019 -2021 in critical care occupational therapy services, for the 30 patients*.** There is one astronomic shift in 2019, this was a complex case patient that needed more therapy (figure 4.3).

***- Number of missed treatment sessions till discharge date 2019 -2021 in critical care occupational therapy services, for the 30 patients*.** There is one astronomic shift in 2021, this was due to staff shortages (figure 4.4).

4.2.2.3. CCU OT staff sick days taken data

Sick days were collected as it is an indicator of staff stress and job satisfaction (Kelley 2011, Alilyanni et al. 2018). Sick days were noted for the same months as the research was carried out to try to keep the conditions of variability similar for the different years. The CCU OT service manager provided the collated data in table 4.4., from years 2019 to 2021, Jan to Jun (see table 4.4 in Appendix 12).

4.2.2.4. CCU OT staff motivation data

In the SVM literature motivation is indicated as changed for staff but not explicitly measured. Motivation data were collected from each of the three CCU OT staff, as these data were an indicator of job satisfaction (Pink 2011) (see Appendix 13 table 4.5 is colour coded to show the different staff's motivation data). The scale used is the Multiple Motivation at Work Scale (MMWS) (see Appendix 5). The question the staff are answering in this scale is "Why do you or would you put effort into your current job?" applied to 19 statements using a self-reporting 7-point rating scale applied to each statement: "1= not at all for this reason; 2= very little; 3 = a little; 4 = moderately; 5 = strongly; 6 = very strongly; 7= completely for this reason" (Gagné et al. 2015, p.196). Description of the three main categories of motivation (Gagné et al. 2015):

-*Amotivation*

Lack of motivation.

Staff scores: All three staff, Ms Blue, Ms Red and Ms Green, scored that this had no reason at all for them putting effort into the job.

-*Extrinsic*

To avoid or gain something (e.g., avoid punishment/disapproval) or reaching a personal goal. Here you have subcategories; *external regulation* (e.g., avoiding punishments or gaining rewards), *introjected regulation* (regulating behaviour by internal forces, of ego, guilt and shame), *identified regulation* (volitional participation for instrumental reasons, that is doing whatever it takes to get to the end goal).

Staff scores:

Extrinsic regulation social, all three scored this had very little reason for them putting effort into the job.

Extrinsic regulation material, two of three staff, Ms Blue and Ms Green, scored not at all and Ms Red scored very little, as reason for them putting effort into the job.

Introjected regulation, two of three, Ms Blue and Ms Green, scored

moderately and Ms Red scored very little, as reason for them putting effort into the job.

Identified regulation, two of three staff, Ms Blue and Ms Green, scored a little and Ms Red scored very strongly, as reason for them putting effort into the job.

-Intrinsic

Participating in work because it is interesting, satisfying, or enjoyable. Staff scores: each of the staff scored differently, from moderately to very strongly; Ms Red moderately, Ms Blue strongly, Ms Green very strongly, as reason for them putting effort into the job.

In summary, for all three staff the relatively influential motivation at work category is from intrinsic motivation, with very limited influence from external factors for their motivation at work.

4.2.2.5. Cost of CCU OT service per patient

The cost data will help to carry out a ICER calculation towards a cost effectiveness evaluation between the service before the implementation of the research compared to after in terms of cost per patient. The CCU OT service manager advised that the service cost £216 per day per patient. If daily hours are taken as 7.5 hours then cost for one hour of the CCU OT service is £28.80 per patient.

Referring back to the table 4.1 (see Appendix 9), the total cost of 549.43 hours of intervention time delivered is £15823.58, for the identified 90 patients over the years 2019-2021.

4.2.3. Summary of Check phase service evaluation findings

SVM states that from the service evaluation from patient and staff perspectives the check phase elucidates the purpose, demand, and capability of the service in meeting what the patients want. The following are the summary of findings from this phase (Seddon 2005, Zokaei et al. 2011).

4.2.3.1. Realisation by CCU OT staff that they are working under defacto purpose

In SVM literature it is often documented that the defacto purpose, the purpose that is accepted as real is usually not service user facing, and this is realised through the evaluation process with service users and staff in the check phase. Then staff identify the actual patient facing purpose of the service once they evolve their understanding of the purpose of their service from the service users' perspectives. Evaluation discussions led to clarifying the old purpose was impairment focussed more the generic medical focus of that was organisation facing.

Old purpose, organisation facing

The CCU OT staff agreed that their current purpose as "*to assess change in the patient's function and identify impairments that need intervention, that may improve the patient's function*".

The old purpose does not relate to CCU OT staff occupational therapy roots for service provision for their patients. So, the staff developed a purpose that represented the CCU OT service users, it is a quote from a patient during the check phase that the staff felt summed up as their actual purpose for the CCU OT service provision for their users.

New purpose, patient facing

"*Be able to do some of my personal needs to get me moving to get me prepared for leaving critical care and to have continuing therapy when I leave critical care*."

4.2.3.2. Demand on service from patients

When the staff looked at the value demand from the patients' perspectives, they identified that patients want to get mobile and be ready to go home. The patients did not identify specific problems to the occupational therapy service, because they could not identify occupational therapy as part of their treatment journey. Within this discussion the CCU OT staff identified that they do not have an outcome measure that showcases occupational therapy.

4.2.3.3. Capability of service

The run charts show the ability of the service to deliver against the purpose of the service. Most of the special cases on the run charts were due to staff shortages. The quantitative data indicated 59%, of the CCU OT service planned treatment sessions are missed, that is not delivered to patients. Fifty seven percent of the missed sessions are under the category of resources, which the lead therapists stated were due to staff shortages.

4.2.3.4. Flow diagram of occupational therapy service end to end

The end-to-end map of the service delivery process is presented in figure 4.5.

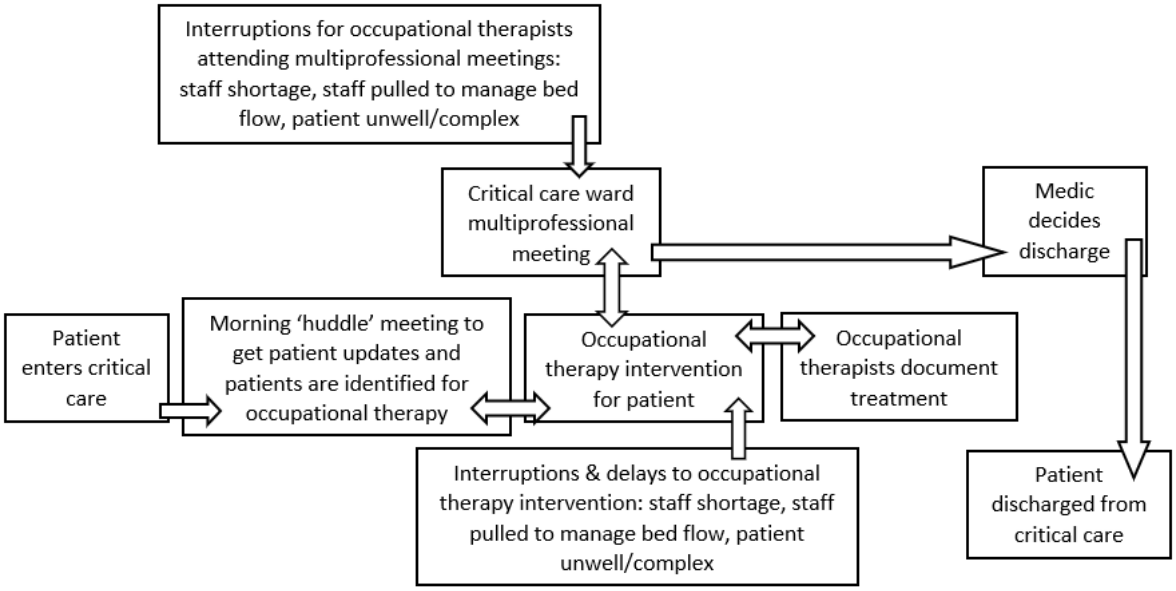


Figure 4.5. End to end map of the critical care occupational therapy service

The flow diagram shows the steps in the delivery of the CCU OT service and the decision points.

4.2.3.5. System conditions

The system conditions are things that explain the behaviour of the CCU OT service, and these are summarised from the CCU OT staff evaluations and agreed with them as being:

-CCU OT staff and manager identified that they are being pulled away from their work to deal with bed flow in other parts of the hospital, contributing to missed

sessions. SVM identifies missed sessions a failure demand, failure to do something that should have been done.

- CCU OT staff identified that shortage of staff has led to missed sessions.

-Staff vacancies not filled; manager confirmed that there is a shortage of staff.

-Promoting and explaining occupational therapy needs to be improved, as not recognised by patients as a service they receive, manager indicated that this may be the same for other professionals within the service.

4.3 Plan Phase

In this phase the CCU OT staff identified the changes from evaluating the data from the Check phase and relating to the system conditions identified. The data were summarised into a Padlet, https://padlet.com/musharratahmedlanderyou/lmb7k0xl9b7fu7st, where the CCU OT staff could edit. But also, the Padlet was referred to enable discussions and decisions around developing and planning changes that the staff wanted to implement. Planning meeting happened on 6-10-2021.

Changes identified by the CCU OT staff team to be enacted during the research implementation process are listed and were formed from the qualitative data section 4.2.1. and quantitative data section 4.2.2:

1). Increase the caseload of the grade 6 and new grade 7 occupational therapist to help to reduce the missed sessions.

2). To identify an assistant to provide some interventions for the CCU OT service therapist to help to reduce the missed sessions.

3). Developed a patient centred purpose that relates to occupational therapy.

New patient facing purpose

The CCU OT staff agreed that their purpose should be what a patient said in their interview "*Be able to do some of my personal needs to get me moving, to get me prepared for leaving critical care and to have continuing therapy when I leave critical care*".

4). Develop new paperwork that applies the GAS goals format (outcome measure specific for occupational therapy).

5). Develop new occupational therapy poster to showcase CCU OT service to place on the corridor board, towards improving presence of occupational therapy.
6). Say 'occupational therapy' and not abbreviate to OT, towards improving presence of occupational therapy.
The contents of the list are not fully the end-to-end process changes that is advised by the SVM process. However, this was guided by the staff which is still part of the SVM process.

The other changes the staff raised, but decided this was longer term discussions outside of the scope of the research:
-Discussion between management and therapists regarding ring-fencing CCU OT staff to be only for CCU OT service work;
-To explore having an assigned therapy assistant for CCU OT service, which again was decided to tackle outside of the research;
-All CCU OT staff to develop a plain English explanation of occupational therapy to give to patients as written information.

The PhD researcher had also identified outcome measures from literature, that are used to measure the impact of service change on the service and staff: run charts, cost effectiveness evaluation, sick days off and motivation at work.

4.4. Do Phase

No findings displayed at this phase as it is related to implementing the changes, which took place from January 2022 to June 2022, this is less than the minimum 1 year period for changes to start to embed for service improvement changes (Zokaei et al. 2010). This is due to the interruption from the covid strategies and the time limitation for the PhD.

The CCU OT staff took on responsibilities to carryout implementation of the agreed changes:
-The lead occupational therapist collated the data into a password protected excel spreadsheet regarding the quantitative data.

-The lead occupational therapists designed the new paperwork for the outcome measure data collection with consultation with the other members of CCU OT staff.
-The lead occupational therapist would monitor the allocation of cases to share across CCU OT staff.
-The grade 6 member of staff was leading the coordinating the designing of the new corridor information poster.

The researcher and the lead occupational therapists decided to meet monthly to touch base, to catch up about the data and to discuss and resolve any problems.

The researcher booked in two dates with the CCU OT staff to evaluate the experience of the process and delivery of service improvement. However, they could contact the PhD researcher outside these planned evaluations for discussions about their work or to clarify any points.

4.5. Check Phase 2

The SVM cycle can be iterated as many times as required, Check phase 2 is the start of the second iteration, at this phase here comparisons of the before and after data took place. Working within the research timeframe the research was only able to start the 2nd iteration by returning to the Check phase but not the whole SVM cycle. The quantitative and staff evaluation (Ms Blue, Ms Red and Ms Green) data were collated by the end of June 2022 to 2nd week of August. However, again recruiting patients who were discharged from the service during the changed way of working was challenging, and two patients came forward (Ms Rose, Ms Gold), and were interviewed separately on 23-09-2022 due to their availability.

4.5.1. Quantitative data before and after comparison

As guided by the SVM process, run chart data (see Appendix 19 for year Jan-Jun 2022) and staff identified operational data were collected and compared. The patient data collected were on number of sessions, intervention hours, missed sessions, number of days from referral to 1st contact and 1st contact to discharge (see Appendix 14 and 15.), number of times the term 'occupational therapy' stated in focus group transcripts of staff before, during and after research implementation

period (see Appendix 22 table 4.17), caseload distribution, and cost effectiveness evaluation. The lead therapist provided information on twenty nine patients for 2022 from Jan – Jun. Additional data regarding service evaluation as identified from the scoping review is compared here too; staff sickness data, staff motivation data.

4.5.1.1. Missed sessions data before and after

Table 4.8. shows the percentage of missed treatment sessions from year 2022 (29 patients) and the total from years 2019 to 2021.

Table 4.8. Comparison of missed session percentage of years 2019 -2021 with Jan-Jun 2022

patient year	Percentage of missed sessions overall when adding sessions provided and sessions missed (%)	Percentage of missed sessions from category C (Resources includes staffing), compared to total missed sessions (%)
2019-2021	59	57
2022	61	59

The missed sessions have increased in year 2022, comparatively. From this data the current total of missed sessions is 61%, which is an increase from 59% of the before timeframe of missed interventions. For the total of monthly missed sessions Jan to Jun from years 2019 to 2022 (see Appendix 15 table 4.9.) a one way ANOVA statistical analysis was carried out to identify if there were any significant differences between the means of the groups, (see Appendix 16 table 4.10. for the analysis outcomes). The p value result was 0.00 indicating statistical significance, with significance threshold set as *p-value ≤0.05*.

To be able to check if there are any significant differences between groups a Tukey Kramer HSD (honest statistical differences) multiple group comparison analysis was carried out, with significance threshold set as *p-value ≤0.*05, see table 4.11.

Table 4.11. Tukey Kramer HSD Multiple Group Comparison missed sessions for years 2019-2022, months Jan -Jun

					95% confidence interval	
year	*years*	*Mean Difference (year-years)*	*Std. Error*	*P value/ Significance ≤0.05*	*Lower Bound*	*Upper Bound*
2022	2019	11.667	5.834	.221	-4.66	28.00
	2020	30.167*	5.834	.000	13.84	46.50
	2021	22.000*	5.834	.006	5.67	38.33

The highlighted areas in table 4.11 indicate that there is a statistically significant difference between the means of the missed sessions of years between 2022-2020 and between 2022-2021. The years 2020 and 2021 were the UK COVID lock down period. The means of the missed number of sessions for the years are: 2020 = 7.5, 2021 = 15.7 and 2022 = 37.7, indicating year 2022 had the greater mean of missed sessions from the months Jan-Jun.

4.5.1.2. Missed CCU OT patient sessions due to category C resources

A one way ANOVA was conducted for the missed sessions due to category C that is due to resources, which as indicated by the lead occupational therapist is in the main due to staffing shortages, but the p value did not show significance at 0.08 (threshold for significance *p-value ≤0.05* (see Appendix 17 table 4.12.).

4.5.1.3. Number of days of referral to 1st contact

A one way ANOVA statistical analysis was carried out with the data (see Appendix 9 and 14 for the data used from table 4.1 and 4.6), to identify if there were any significant differences between the means of the groups of data for the days from referral to 1st contact with patients from CCU OT service, (see Appendix 18 table 4.13. for the analysis). A p-value of 0.00 (threshold for significance $p \leq 0.05$) informs that there is a statistically significant difference between the means of the groups, but not which specific groups. A Tukey Kramer HSD (honest statistical differences)

multiple group comparison analysis was carried out, see table 4.14. As $p \leq 0.05$, this indicates that the difference between years 2022 and 2019 may not be down to chance.

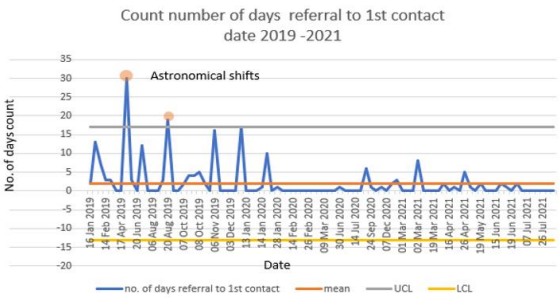
Table 4.14. Tukey Kramer HSD Multiple Group Comparison days from referral to 1st contact for CCU OT service patients for years 2019-2022

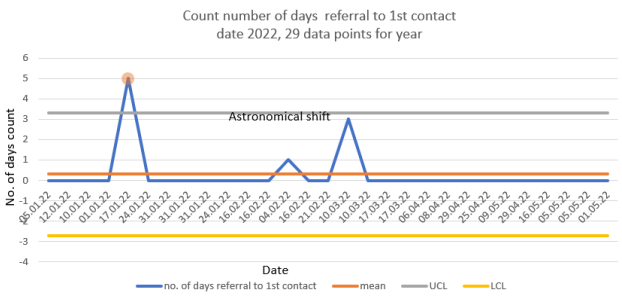
					95% confidence interval	
year	*years*	*Mean Difference (year-years)*	*Std. Error*	*P value/ Significance ≤0.05*	*Lower Bound*	*Upper Bound*
2022	2019	-4.523*	1.037	.000	-7.31	-1.74
	2020	-.556	1.037	1.000	-3.34	2.23
	2021	-.490	1.037	1.000	-3.27	2.30

The highlighted area in table 4.14 shows that there is a statistical difference between the number of days from referral to 1st contact between years 2022 and 2019. On average in 2019 it took 4.8 days from referral to 1st contact compared to an average of 0.3 days in 2022, the mean is comparatively less in 2022.

4.5.1.4. Run charts comparing 2019-2021 vs 2022

The after research implementation period run charts in 2022 in comparison to the before run charts (2019-2021) show that there were in general less special cases, there is one astronomic shift in the 2022 run chart for referral to 1st contact, this was due to staff shortage (see run charts comparisons in figure 4.6., Appendices 10 & 19 provide larger images of run charts). Additionally, the patterns in the run charts after, for 2022, show a regularisation of the patterns in comparison to before.





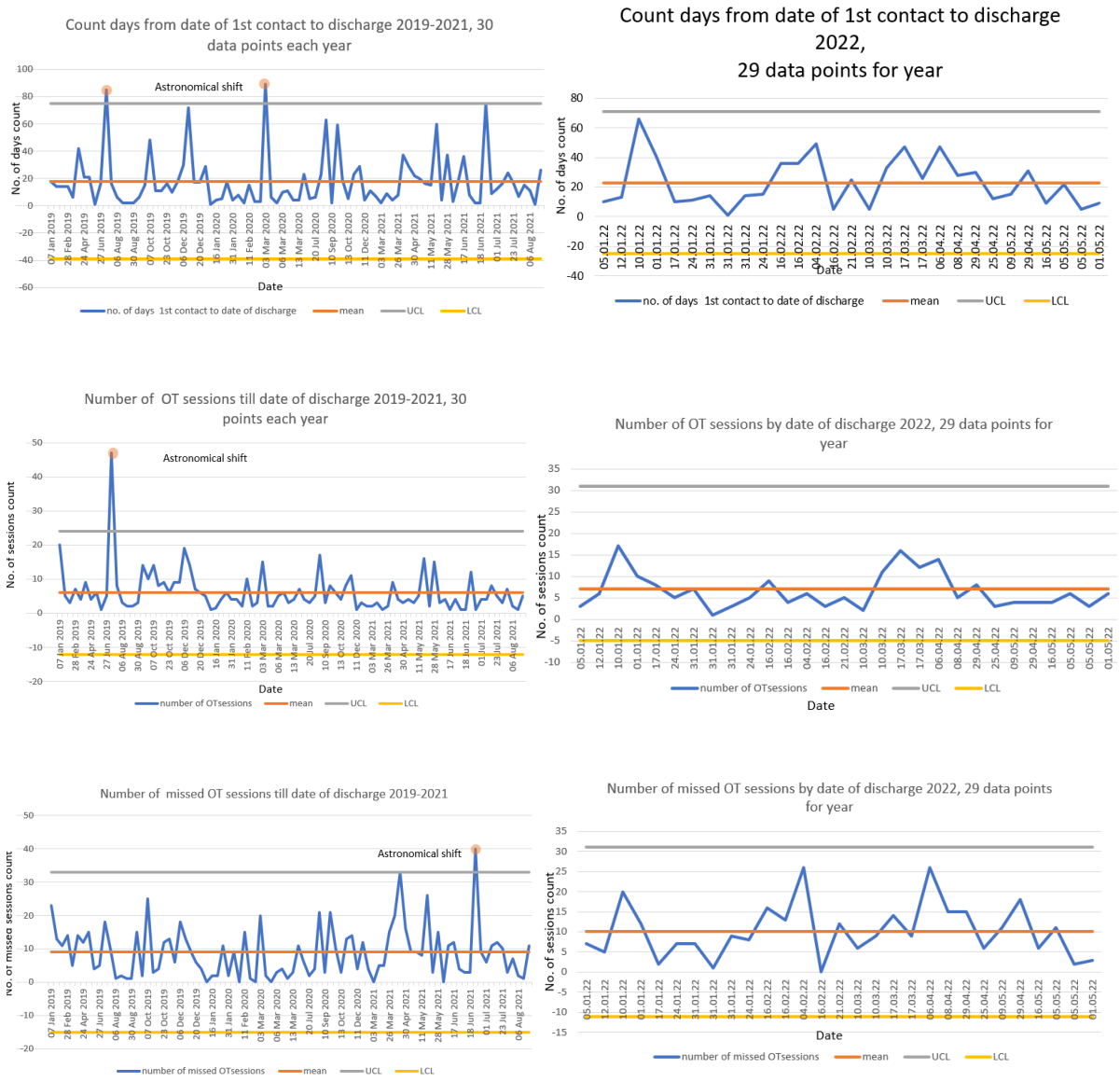


Figure 4.6. Comparing before and after run charts 2019-2021 vs 2022

4.5.1.5. CCU OT staff sickness days taken 2019-2021 vs 2022

A one way ANOVA was carried with the sick days to compare before and after data (see Appendix 20 and 12 for table 4.15. and 4.4. data used for analysis), the analysis showed no statistical significance with a p value of 0.22 which does not meet the threshold for significance *p value ≤0.05*, (see Appendix 21 table 4.16).

4.5.1.6. CCU OT staff motivation date before and post research

The summarised data for staff's motivation scores before and after are presented as tornado charts in figure 4.11. The manual for the MMWS states that no statistical analysis can be carried out only indication of changes and by how much (Gagné et

al. 2015). The scores are the averages calculated for each category. There are three main categories of motivation at work in the scale (Gagné et al. 2015):

-*Amotivation*

Lack of motivation.

-*Extrinsic*

To avoid or gain something (e.g., avoid punishment/disapproval) or reaching a personal goal. Here you have subcategories; *extrinsic regulation* (e.g., avoiding punishments or gaining rewards), *introjected regulation* (regulating behaviour by internal forces, of ego, guilt and shame), *identified regulation* (volitional participation for instrumental reasons, that is doing whatever it takes to get to the end goal).

-*Intrinsic*

Participate in an activity/work because it is interesting and or enjoyable/satisfying.

Ms Blue has changes in four of the six dimensions categories:

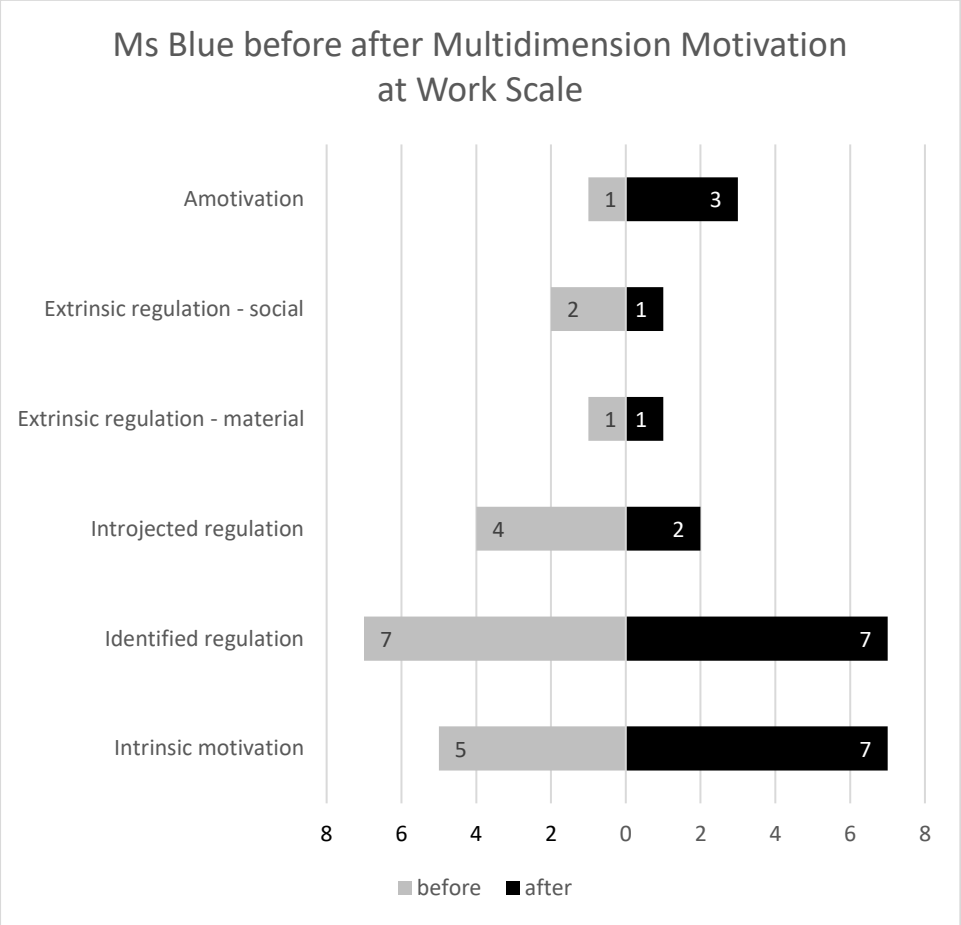
amotivation and intrinsic motivation has increased,
the extrinsic regulation social and introjected regulation are down,
the rest remain unchanged.

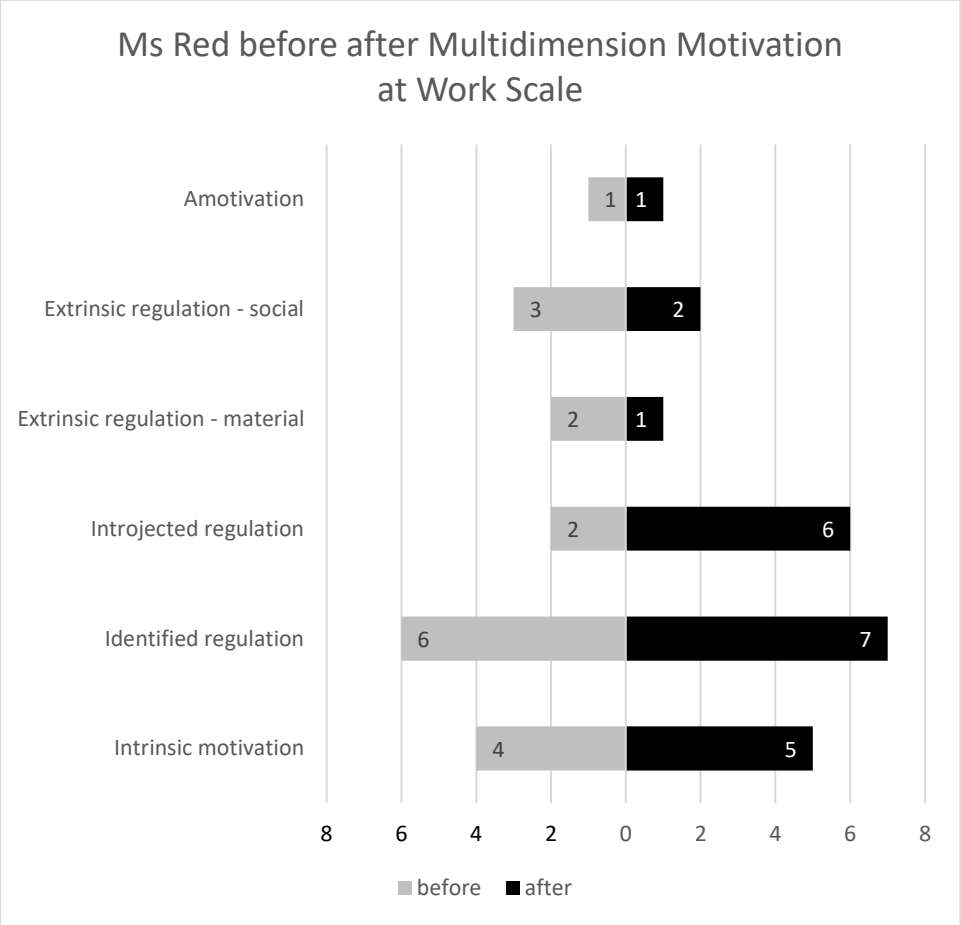
Ms Red, has changes across five out of six dimensions:

down for both extrinsic and introjected regulation,
up for both introjected and identified regulations, and intrinsic motivation,
no change for amotivation.

Ms Green, has changes across five out of six dimensions:

up in amotivation, extrinsic regulation material, and amotivation,
down for both introjected regulations, and intrinsic motivation, no change for extrinsic regulation social.


Ms Blue before after Multidimension Motivation at Work Scale
Amotivation
Extrinsic regulation - social
Extrinsic regulation - material
Introjected regulation
Identified regulation
Intrinsic motivation
1
3
2
1
1
1
4
2
7
7
5
7
8
6
4
2
0
2
4
6
8
before
after


Ms Red before after Multidimension Motivation at Work Scale
Amotivation
Extrinsic regulation - social
Extrinsic regulation - material
Introjected regulation
Identified regulation
Intrinsic motivation
1
1
3
2
2
1
2
6
6
7
4
5
8
6
4
2
0
2
4
6
8
before
after

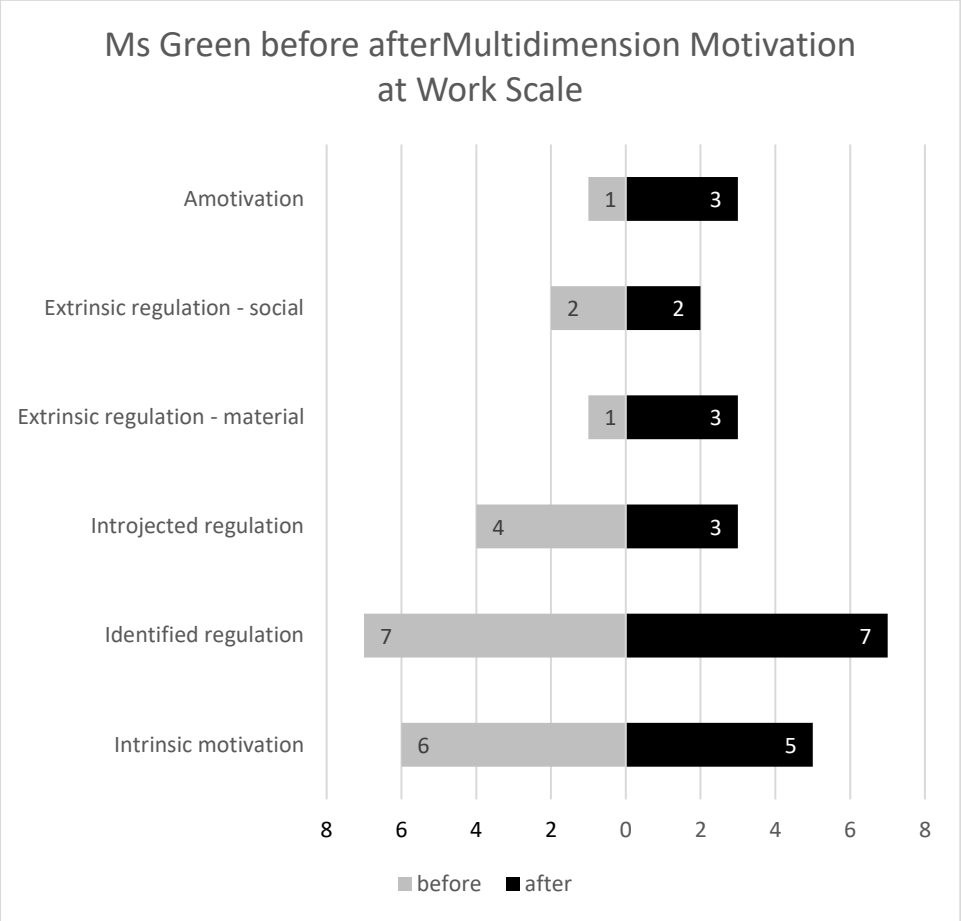


Figure 4.11. Tornado charts of CCU OT staff's motivation data before and after average scores for each dimension on the Multidimension Motivation at Work (MMWS) scale.

4.5.1.7. How many times CCU OT staff have said the term 'occupational therapy' before, during and after the research implementation period

In the Plan phase of SVM the staff had decided they would say occupational therapy instead of the abbreviation OT. The researcher counted the number of times the term occupational therapy and the abbreviation OT was stated in the transcripts pre-implementation, during implementation and end of research evaluation, (see Appendix 22 table 4.17). regarding the count of the number of times occupational therapy was stated in transcripts). The one way ANOVA analysis showed significance 0.00 (threshold for significance *p value ≤0.05)* between the means of the groups (see Appendix 23 table 4.18.), hence a Tukey Kramer analysis was carried out for inter group comparison.

Table 4.19. Tukey Kramer HSD Multiple Group Comparison count of CCU OT staff stating occupational therapy from transcripts

					95% confidence interval	
transcript	*transcripts*	*Mean Difference (year-years)*	*Std. Error*	*P value/ Significance ≤0.05*	*Lower Bound*	*Upper Bound*
end of research	Pre-implementation	.431*	.103	.000	.19	.67
	During implementation	.549*	.137	.000	.22	.87

The Tukey Kramer HSD analysis (see table 4.19) indicated there is statistically significant differences between the means of the end of research transcripts count with each of the counts in the pre and during implementation transcripts regarding stating the term occupational therapy vs. the abbreviation OT. The mean was the greatest in comparison for the end of research meeting transcript regarding the CCU OT staff saying occupational therapy, and it was the lowest in the transcript which represented timeframe during the research period.

4.5.1.8. Caseloads distribution

In the Plan phase the CCU OT therapists decided that the grade 6 and the new grade 7 will increase their caseloads as the caseloads were near zero. It was explained that due to the grade 6's ward work duties outside of the CCU she was unable to take any cases from CCU during the research period, see table 4.20. Ms Purple left November 2021 to set up a new CCU OT service at another hospital within the trust.

Table 4.20. Caseloads on CCU wards for occupational therapy staff

Year 2022 caseload	Jan	Feb	Mar	Apr	May	Jun
Number of caseload patients Grade 7 part-time (lead) - CCU OT ONLY	17	24	28	27	22	20

Number of caseload patients new Grade 7 - CCU OT ONLY	12	8	25	17	12	21
Number of caseload patients Grade 6 CCU OT ONLY	0	0	0	0	0	0

During the planning discussion 06-10-2021, it was decided to identify a rehabilitation assistant to support the CCU OT staff, however this was not fulfilled by the end of the research timeframe.

4.5.1.9. ICER calculation for CCU OT service, cost per patient

The question the cost effectiveness evaluation is answering:
Do you get better cost outcomes per patient in relation to treatment hours of CCU OT service delivery from the changed way of working after implementation of SVM service improvement framework?

Table 4.22. is calculated from the data of the total number of hours of treatment (delivered and missed) per patient in each year from the patients' data provided (see Appendix 24 for table 4.21.).

Table 4.22. Average cost per hours of treatment per patient per year

Year	2019	2020	2021	2022
Mean (hrs)	9.55	5.41	7.4	8.379
mean £	275.04	155.76	213.12	241.32
total hrs	573	324.5	444	486
total £	16502.4	9345.6	12787.2	13996.8

The table 4.22. shows that the only time the cost of hours of treatment is comparatively less for year 2022 is with year 2019. The quantitative outcome for costing of hours of service per patient, referring to table 4.21 the total hours for 29 patients in 2022 is 486 hours, at total cost of £13996.80, it costs £28.8 per hour per patient daily. To calculate the ICER it is assumed that all other costs remained the same. As the timeframe was less than a year (Jan – Jun 2022, before and after

comparison) no discounting was calculated (discounting is understanding future costs of a service in current monetary terms).

$$\text{ICER} = \frac{\text{cost of changed service} - \text{cost of old service (total 2019-2021)}}{\text{new service sample of patients} - \text{old service sample of patients}}$$

$$= \frac{£13996.80 - £38,635.2}{29 - 90} = \frac{-£24,638.40}{-61} = £403.91 \text{ per patient}$$

The ICER is only confirmed as cost effective if the treatment is statistically significant, these data were missing from the CCU OT service, hence cost effectiveness cannot be confirmed. The staff noted that they did not have an occupational therapy outcome measure from the check phase of SVM and identified it as an action as identified in the plan phase. They have just developed the paperwork for GAS goals to collect quantitative data regarding the outcomes of their occupational therapy intervention (see section 4.5.5.)

4.5.2. Qualitative data during and after implementation of research

The qualitative data identified in the findings are; the themes from the transcripts regarding evaluating the service by patients and CCU OT staff during and after the research implementation process, qualitative feedback regarding when the CCU OT staff are saying the term 'occupational therapy', comparing image of before and after CCU OT service corridor information, and image of development of new paperwork to use with CCU OT service patients.

4.5.2.1. Ms Rose and Ms Gold

Summary of comments were identified in relation to asking the discharged patients of their experience of the CCU OT service with the changed way of working. It was a summary as it was not possible to identify themes with two patient interviews. But what they did not explicitly or specifically identify was occupational therapy or as to what the CCU OT service had provided for them, this was similar to the patients interviewed before.

Both Ms Rose and Ms Gold stated that the critical care service took care of them. Ms Gold recounted a moment when a physiotherapist had given her hope of walking again. They both focussed on their mobility in the rehabilitation during comments/ discussion. Ms Gold felt her stay in critical care could be summed up as re-education overall. One critique from Ms Gold was feeling forgotten when moved from one physiotherapist to another early on in her rehabilitation. Most of Ms Rose's commentary was about her toileting needs when she was at the rehabilitation place that she was sent to following critical care. The one criticism from Ms Rose was regarding the rehabilitation place that she was sent to after critical care, she felt her toileting needs were not met and hence nor her dignity maintained because of it. She asked the researcher to pass on her feedback as a complaint to Ms Blue. The researcher did do this in an email to Ms Blue and the CCU OT team and advised to contact Ms Rose directly for any further communication regarding this as part of research ethics governance.

Example quotes:
Ms Gold *"Firstly I'd like to say the* [critical care] *team I had were really good".*

Ms Gold *"The physios I had were absolutely tremendous. And one I had I don't know her name she was the foreign lady, and when they came up to assess me first of all, because they didn't think I would walk at all after being in bed so long. And she said yes, I think there is a possibility there that it can happen".*

Ms Gold *"A lot of it was re-educating I think is the right word for it".*

Ms Rose *"Truly you see I thank them all for what they did for me. But for them I wouldn't be here"*

Ms Rose *"They cared for you there* [critical care at the hospital]. *Then following that I went into rehab, which was a bit distressing really. Because when I wanted the toilet, you couldn't get to it, so I was having accidents when I'd needn't have. Because of everything else I couldn't get to the toilet"*

4.5.2.2. CCU OT Staff focus group interviews to evaluate service during and after research implementation period

Two evaluation meetings with CCU OT staff were carried out, once during the service improvement change implementation process, 20-04-2022, and another near the end of the six months timeframe of the research, 29-06-2022. In general, there is limited reference to the qualitative data in the SVM literature. The 'during' evaluation is out of step with the SVM framework, as it is a before and after evaluation that is regularly documented in the literature. This 'during' evaluation meeting with CCU OT staff gave further insight into how they were managing and enabling the changes identified and the impact on them personally, the meeting was also a formal check in meeting with staff and to support and reassure them.

Themes from service evaluation discussions 20-04-2022 with CCU OT staff

Themes are identified supported with at most 4 exampling quotes as evidence. Ms Blue and Ms Green attended.

Theme: Shortage of occupational therapy staff

The staff make reference to insufficient staffing levels in CCU OT and staffing outside the CCU OT service, which is affecting the capacity of CCU OT staff to fully engage with the changes they want to make. In relation to the run charts, shortage in staffing was identified as causes for the special cases identified in changes to regular work pattern behaviour.

Example quotes:

Ms Green *"Cos of the ongoing pressures of the hospital and ongoing team dynamics there's not been the capacity for me to take that on".*

Ms Blue *"There's such a staffing crisis here…..That we can't just pull from another team to put someone in the medical post …. because there isn't anyone to pull".*

Ms Green *"It's like a house of cards. Obviously if one person falls it all kind of falls It's something like that unfortunately".*

Ms Green *"But obviously if that team is struggling then there is still the expectation that I will support with that. So, it's time to give them more staff so that hopefully me being pulled is going to be less frequent".*

Ms Blue *"I struggle thinking about. Like you're straddling, you're on a fence and you're like being pulled in either direction, I want to be there but I need to there. In my head I want to be there but I am here I just think if that was me I'd find it really stressful".*

Theme: Responsibilities from the job description

The staff refer to the responsibilities of the job description as one explanation of what is hindering the CCU OT staff commitment to change. This is more specific in comparison to before themes of e.g., 'Current CCU OT job involves' or 'Current purpose of CCU OT service' or 'Reflecting on current purpose'.

Example quotes:

Ms Green *"And because my post is both respiratory and critical care and even in my job description it has a bit of both of those. So, although I have purely been one [not critical care], the plan is to be more with critical care".*

Ms Blue *"So, in the JD* [Job description]*. In* [staff member named] *job description it does say about cross covering respiratory wards".*

Ms Green *"Because I think my job description is very clearly about the post. Like it says CCU and respiratory and makes reference to helping out respiratory and seeing patients as needed. It's not that I can say I'm purely one".*

Ms Blue *"I think with ward OT and critical care OT are poles apart in terms of the job. They're just totally different. So I think that's the hard thing is to flip your head into meaningful occupations and all those activities and then going to back to discharge planning. It's like I'd find it hard to shift I work a weekend and almost start to hyperventilate*

because I don't know how to give out a commode. You know how to assess a patient on the ward of course you do. But it's like it's so different".

Theme: Funding arrangements for CCU OT service

Ms Blue refers to the funding arrangements as one explanation of what is hindering CCU OT staff caseload reorganisation. This theme was not mentioned before.

Example quotes:

Ms Blue *"the critical care OTs and the respiratory OTs so the budget, well I don't have much to do I don't really have anything to do with the budget, but essentially they are under one pot I'm guessing".*

Ms Blue *"I've got very frustrated. A little bit irate and think the money would be better ring fenced under critical care is my own opinion".*

Ms Blue *"About ring fencing critical care funds and actually the data really shows that actually therapists that are ring fenced purely in critical care they take part in research they go to the governance meetings. They're involved in senior leadership stuff, do projects. And the people that don't are sat very much outside. So it does make a huge difference gaining ring fenced funding".*

Ms Blue *"I don't know if they would put out for* [occupational therapy] *locums in the organisation"* [Ms Green suggests that they should try to ask].

Theme: Bed flow management external to CCU OT service

The staff referred to having to manage the bed flow in the wider hospital as one explanation of what is hindering change.

Exampled by one quote:

Ms Blue *"I think it's the bed flow discharges are the most important thing".*

Theme: Feeling unsupported or unchallenged by the system to develop

Ms Blue discusses how development of CCU OT staff has been hindered by systems issues. Although in the theme 'Promoting occupational therapy' from the evaluation of the service before implementation, indicated that the staff group were challenging themselves by finding continuing professional development opportunities to advertise occupational therapists in critical care. In the SVM literature it repeatedly brings forward the notion that by going through this service improvement process it exposes the problems within the system that have gone on unnoticed by the service, but also what is termed as the change being limited due to meeting the boundary of the system, because another system is at play and not working compatibly (Seddon 2004, Zokaei et al. 2011). So, for example, the organisation funding system could be not supportive or the focus on bed flow could be a hindrance to staff professional development opportunities.

Exampled quotes:

Ms Blue *"Because when I first came here from another trust I was an agitator anyway. But after you've been somewhere I'm going to say is that's it quite passive …… There's no challenge There's no challenge of how you are going to run your service. There's no The thing is brutally honest there's nothing".*

Ms Blue *"You just want to do your job and go home rather than drive change that's what they want you to do".*

Ms Blue *"I'd never be happy just to do my job and go home I need other things to do the other drivers. I'd be really bored if I didn't have other projects going to hang on. So, I think like your mentoring and saying actually that challenge is ok it's not challenging for challenging's sake it is an ok thing to challenge for and that's been quite helpful and sort of how to go about it as . Like where to push how to push".*

Ms Blue *"It's culture. It's a culture of not".*

Theme: Changes

The staff identify the changes implemented and changes that are happening to them.

Ms Blue *"I have started emailing more about OT. I've been doing more of those sorts of things. Obviously, the messaging of OT has been in the MDT meetings using occupational therapy wording. Been talking about the GAS goals, we are pretty much sorted with that we haven't started using it yet".*

Ms Blue *"Cos I think the poster will go nicely with OT pillar that's coming out. That's a really nice depiction of that and seen as we did it why not. So, I think I've been more on the organisational side and pushing more of the strategic".*

Ms Blue *"That was the medical leadership faculty. So I just went for it because it wasn't a long application. A year long secondment basically. Big stuff they were talking about in the application. It's all about managing healthcare systems. So, I'm thinking if I could get to a point where I've got that credential then I could be developing critical care occupational therapy nationally from a different position rather than working in it working from a different position".*

Ms Green *"My eventual aim at some point is I would like to do lecturing ….. I know I need to do my postgrad as I only have my undergrad. And isn't it I ideally need to do a one teaching diploma if I want to be a junior lecturer".*

Themes from service evaluation discussions 29-06-2022 with CCU OT Staff

Themes identified from the evaluation meeting at end of the six months. Ms Blue, Ms Red and Ms Green attended.

Theme: Changes in CCU OT staff

The theme relates to a staff internal promotion and the lead leaving the current job to a promotion post. One part time grade 7 had already left before the research started implementation, so the CCU OT staff team were one member down at the start. One

of the staff became very upset that the lead was leaving and did not contribute for most the session.

Example quotes:

Ms Blue *"I got band 8 job so I am now officially a critical care clinical specialist, not at this trust it's at* [removed name] *hospital at* [location removed]*".*

Ms Green *"I got offered a position that is band 7, yes majority ward work but with a focus on CCU and step down patients".*

Ms Red *"I am unhappy for myself because Ms Blue will be leaving. So I'm not sure about how I feel about staying honestly so I. So that's something I need to consider".*

Ms Red *"But I must say I have struggled with it more this time. I think that is because it's a lot to do with the fact this is a new role for me, I am stuck emotionally".*

Theme: CCU OT staff evaluating on the benefits of being part of the research

The theme related to staff reflections of the benefits gained by being part of the research. This type of reflection does appear in SVM literature to show how going through the SVM process is impacting the people doing the work.

Example quotes:

Ms Green *"I think pros wise even us having to really analyse why you do your own practice why we do things and really making sure we feel focussed on the occupational therapy part of being of being an occupational therapist, it's been the most interesting and useful part it's made us be quite self-reflective. And I found all of that really useful".*

Ms Blue *"I think that for me biggest pro I know sounds bad as an OT. But understanding why we are doing it. What we are doing it for. When we're doing what we're doing. Actually trying to nail down our purpose it was difficult before wasn't it."*

Ms Blue *"So I think like when we first started talking about the service and it was about the purpose and what the patient wanted. I think yeah I suppose you are confronted with things that you had probably known that you should've been doing, but or have a different perspective on it. But because you're kind of in the system that is very medicalised you see that as the right way to go. And actually this process is kind of being able to have timeout and discuss the service and where we're going with it. And I feel still feel like I'm being interviewed today. And actually having that change of perspective like the positive criticism in a way in challenging our thinking has been really helpful. Kind of actually as Ms Green said we don't need to be completely medicalised that it is about the patient's occupation it's about what the patient wants, and actually hearing about the focus group you did and actually what the patients were saying was really important kind of, cos that information, hearing it from the patient was quite powerful isn't it I think. So, I think that has stuck with me like the aims and the purposes, and also the terminology actually expressing occupational therapy in a different way I think that's been really powerful for me seeing the patient more as a whole trying not to break them down [into parts] as much".*

Ms Red *"And having the confidence in yourself not to feel like that you are not going to sound stupid if you talk about the patient in terms of their occupation and actually what they're doing other than talking about them from an impairment focus level. Actually talking about the fact that yes actually they've been able to feed themselves or they brushed their teeth. Or you know what I mean just talking about as we find them in terms of their occupations is powerful thing. And I think I suppose confidence in that way definitely. So, I think my confidence has grown to be able to do that absolutely but I just need to spend more time to be able to get to that place where I can actually put it into action".*

Theme: Culture of wards CCU OT staff work in

The theme related to how ward culture can affect them and their work.

Ms Blue *"The two areas are very different, I haven't been to a cardiac ward for a while, when I did used go the [removed hospital name] hospital it's so different down on general critical care, the consultants they'll come have cup of tea, this mdt is chatty and says jokes.*

Jokey with everybody jovial relaxed environment. And they're quite happy for me to say what I have to say. They've got in mdt [a] proforma in occupational therapy".

Ms Blue *"I don't think that is to do with us as people or occupational therapy as a profession it's just the state of play in the two different areas Their ethos and culture of the two areas are very different".*

Ms Red adds in response to Ms Blue *"I know you have, whereas in cardio they don't specifically really ask for it. They've got a separate form for therapists. But then because I don't feel I had much, I've got much to say that I'm not adding because I am not seeing everyone that much, or there maybe something to talk about to some people. But because I am not seeing them enough I'm not saying and they're not asking"*.

Theme: Staffing issues

This comment was only mentioned once in the middle of the discussion around ward culture. This lines up with the previous comments on staffing shortages.

Ms Blue *"We're spread thin".*

4.5.3. Qualitative feedback regarding using the term occupational therapy and not OT

This is a non-operational measure of change, which is not indicated in the SVM literature related to professional language and identity.

Mrs Blue reported 31-01-2022 that she for month of Jan she has *"Every Monday medical handover and morning huddle with senior mdt staffing I introduce myself as the occupational therapist rather than OT".*

Ms Green reported 17-07-2022 that *" Since our discussion, I have made a conscious effort to be mindful of my language, and use 'Occupational Therapy' or introduce myself as an 'Occupational Therapist' to patients and staff. This will include correcting if I am called the wrong profession. It has empowered me to ensure I am using the correct name for my*

profession, to try to educate people more on what I do, and not let myself be downtrodden upon about what I do and have people correctly identify myself as an Occupational Therapist. We often end up minimising and shortening our name and what we do, but I am not a 'nurse' or 'Physiotherapist' and have training, skills and a role unique and different to theirs. I do not want to be lumped into their professions.
Examples of this include always introducing myself as an Occupational Therapist to patients, titling notes as 'Occupational Therapist' and trying to make staff on wards aware of who I am and what I do.
I feel I have been more successful in doing this, and not feeling embarrassed or worried about correcting people about my profession (and full professional title). I feel I still have some ways to go (I will still sometimes use OT), however I am ensuring I use 'Occupational Therapist' as my regular language".

Ms Red reported 11-08-2022 *"I would say that during any MDT meetings, and discussions with patients/families I am mindful that I introduce myself as 'the occupational therapist', rather that the OT'.*
I also check in with each of my patients and their families if they are aware of my role as an 'occupational therapist' in the patient's care (which they usually don't). I give them an explanation regarding the scope of my practice dependant on the area [critical care vs ward /patient status]*".*

4.5.4. Corridor poster informing of CCU occupational therapy, before and after versions

This is a non-operational measure of change, which is not indicated in the SVM literature and is related to professional language and identity. During the planning meeting 06-10-2021, discussions regarding identity and presence of CCU OT staff and occupational therapy led to the decision to creating a new poster to replace the current one that was on the wall in the corridor, near the critical care wards. This type of data picture does not feature in the SVM literature, but it is a valid change identified by the staff as it will go towards improving the patient understanding of the CCU OT service.

Figure 4.12. The information that was hung in the hospital corridor about critical care occupational therapy (identifiable information redacted)

From the information on the board in figure 4.12. it is not clear how this service is occupational therapy specifically, and seems to contain generic information, whereas in figure 4.13. there is clearer connection to activity based treatment as is the fundamental feature of occupational therapy collaborating with the patient for their recovery and wellbeing.

Figure 4.13. The new poster that will be hung in the hospital corridor about critical care occupational therapy

4.5.5. Development of new paperwork to record outcome measure

During the planning meeting 06-10-2021 there was a focus by the lead occupational therapist that their service needed to employ an outcome measure that would record and measure the progress of their patients from their occupational therapy work. The staff agreed upon the GAS (goal attainment scale) framework. The lead therapist developed the end agreed paperwork to document patient GAS scores, see figure 4.14. This change would be identified in SVM as a process change, as it is part of the assessment and outcome measure process that was identified for changing.

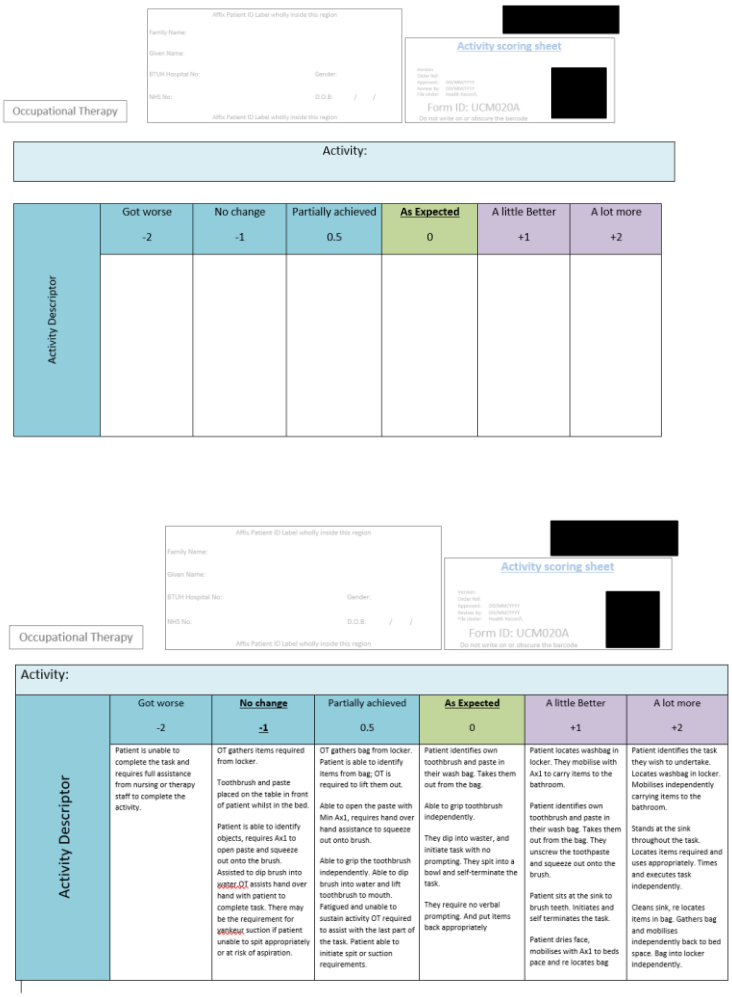


Figure 4.14. New GAS form to record patient scores and related patient activity (identifier information redacted)

4.5.6. Summary of findings from Check Phase 2 tabulated

4.5.6.1. Quantitative summary

Table 4.23. Quantitative findings data summarised (excluding run charts)

Quantitative data	**Before and after analysis outcome**	**comment**
CCU OT service missed delivery of planned sessions	Statistically significant difference between year 2020 and 2021 when each compared to year 2022, for the months Jan to Jun.	The missed sessions had increased in year 2022 in context of the data provided. One less staff member in team from December 2021.

CCU OT service missed sessions categorised as resources	Statistically no significant difference between years	Lead therapists identified that the resources category in the main was staff shortages.
Number of days from referral to 1st contact date	Statistically significant difference between year 2019 and 2022	On average in 2019 it took 4.8 days from referral to 1st contact compared to an average of 0.3 days in 2022, the mean is comparatively less in 2022.
Sickness data	Statistically no difference between each of the previous years (2019 to 2021) and 2022, for month Jan – Jun	On average the 2021 sickness data were higher, which was during the covid period.
Cost data	Average cost of hours of CCU OT intervention per patient before (years 2019-2021) = £429.28, 90 patients Average cost per patient of CCU OT intervention per patient after (year 2022) = £482.65, 29 patients	A cost effectiveness evaluation is not possible as the CCU OT service did not use an outcome measure specifically for their service, to evaluate service effectiveness, which is necessary for this cost evaluation.
Counting number of times CCU Ot staff used the term 'occupational therapy' from transcripts	Statistically significant difference between average number of times CCU OT staff stated occupational therapy in transcript for evaluation of service improvement at the end of research to each of the	The mean of count was highest in the end of research evaluation transcript, and the lowest count in the during service improvement evaluation transcript.

	transcripts of the evaluation pre-implementation and during implementation of the research.	
Caseload increase for grade 6 and new grade 7, the former had none and the latter had near zero on average.	The average patients on the full time grade 7's caseload was 16 and for the grade 6, zero, for the period Jan to Jun 2022. The lead, also a grade 7 and was part time, averaged 23, for the same period.	Staff reason for Grade 6 having a caseload of zero, was that she kept being called for duties on ward external to CCU wards, regarding maintaining bed flow management (to contribute to facilitating patients' discharges to 'unblock' beds).
Multidimension motivation at work scale (MMWS)	Six category dimensions. Ms Blue 67% (4/6) of the categories changed scores. Ms Red and Ms Green 83% (5/6) of the categories changed scores.	Research did not include discussing the scores with each therapist to their understand rationale.

Table 4.24. Quantitative findings data summary comparing before and after run charts

Run chart	**Before and after outcome**	**comment**
Count number of days referral to 1st contact date	2019-2001 (90 patients)' two astronomic shifts 2019. 2022 (29 patients) one astronomic shift.	Less special cases in 2022 for the same months compared to the before run chart
Count number of days referral to 1st contact date	2019-2001, two astronomic shifts, one in 2019 and the in 2020.	Service delivery behaviour pattern showing regularisation in 2022 for the

	2022 no special case	same months compared to the before run chart.
Number of occupational therapy sessions till discharge date	2019-2001, one astronomic shifts 2022 no special case	Service delivery behaviour pattern showing regularisation in 2022 for the same months compared to the before run chart.
Number of missed occupational therapy sessions till discharge date	2019-2001, one astronomic shifts 2022 no special case	Service delivery behaviour pattern showing regularisation in 2022 for the same months compared to the before run chart.

4.5.6.2 Qualitative summary

Table 4.25. Summary of identified themes before and after from qualitative data

Group data	**Before**	**After**
Patient	-Move/mobilise; -Getting ready to go home; -Wanting continuity of therapist	Mobility
Manager	-Staff shortage; -Other professionals' understanding what occupational therapists do; -CCU OT staff pulled away to ensure bed flow maintained in wider hospital; -Capacity of lead occupational therapist to up skill the less experienced therapists in CCU OT;	
Staff	Themes:	Themes:

	-Current purpose of CCU OT service; -Current CCU OT job involves; -Challenges for CCU OT staff; -The occupational therapy work is person centred; -What happened during the pandemic; -CCU OT work is evidence informed; -Developing a new purpose; -Occupational therapy identity; -Reflecting on their current purpose; -Promoting occupational therapy; -Guideline/guidance for CCU OT service; -Current paperwork	-Shortage of staff; -Responsibilities from job description; -Funding arrangements for CCU OT service; -Bed flow management; -Feeling unsupported or unchallenged by the system to develop; -Changes in CCU OT staff; -CCU OT staff evaluating benefits of being part of the research; -Culture of wards that CCU OT staff work in; -Staffing issues
Staff	Abbreviated the term 'occupational therapy' to OT frequently	Making conscious effort to refer to the term 'occupational therapy' in meetings
Staff	Old CCU OT purpose organisation facing in managing the impairment	New CCU OT purpose patient facing
Staff	Old corridor CCU OT poster, very limited not information to define what is and what does occupational therapy do	New corridor CCU OT poster, content explicitly describing what is and what does occupational therapy do

Staff	No outcome measure specific to show case occupational therapy intervention	Paperwork developed in readiness to use GAS goals as the outcome measure for the CCU OT service

Chapter 5 Discussion of Findings

5.1. Introduction

This chapter explores in-depth the meanings that are identified from the quantitative and qualitative data at Check phase 2 from this research, and why the findings matter. As this research is a case study methodology the discussions are particularised to the setting, the ward based CCU OT service, the CCU OT staff, and the profession of occupational therapy in that service setting.

The aim of this study is to explore and evaluate the impact of implementing SVM on service level outcomes of an occupational therapy service in England. Where the service level outcomes for improvement have been identified as process and operational outcomes from the Check phase and the scoping literature review. Answering the question, 'How and why are service level outcomes impacted, after implementing Seddon's Vanguard Method, a service improvement framework, to an occupational therapy service in England?'
The quantitative data were analysed descriptively and using ANOVA and Tukey Kramer statistical analysis where possible. For the qualitative analysis, a systematic approach was applied to identify themes using guidance from Pope et al. (2007). The mixed data synthesis was undertaken using descriptive and interpretive summary. In the synthesis of findings, the relationship between the qualitative and quantitative results, and the relationship of the findings to theorising struggle, systems and professional identity are explored. The discussions of Chapter 5 are grounded in the findings, furthermore, direct quotes from participants is used, and relevant literature integrated to support or confirm the discussions.

The discussions of the findings relevant to service level outcomes and service improvement, are separated into 4 sections:
Section 5.2.1. Typology of struggle for the CCU OT to deliver service improvement;
Section 5.2.2. Interpreting service improvement as a social movement;
Section 5.2.3. Interpretation of themes as forming feedback loops and;
Section 5.2.4. CCU OT staff engagement in service improvement as facilitating improving their professional identity.

Within the 6 months of the research period, the service level outcomes that were impacted from implementing the SVM process were: that the missed sessions by the CCU OT service increased, the number of days between referral and 1st contact are reduced, the case load for CCU for the part time band 6 CCU OT staff member was zero, by the end of the implementation period of the research the CCU OT staff were saying the term 'occupational therapy' more compared to before and during the research period, the scores from the 'motivation at work scale' had some movement, they designed a better CCU OT service poster for the corridor display and identified an outcome measure to showcase occupational therapy and developed paperwork to record this data. The 6 themes identified (see table 5.1), from the CCU OT staff evaluation transcripts from Check phase 2 (see section 4.5.), help to provide some understanding of the quantitative data (see section 5.2. for further discussions).

The SVM literature (Zokaei et al. 2011) does advise that a minimum of 1 year is indicated before the 1st evaluation so that change can start to embed, and any impact can start to show in the data. The PhD research timeframe took place over the COVID19 pandemic, and through lock down (UK COVID19 lock down March 2020 to March 2021 (Institute for Government 2021)). This impacted the timeframe of the research application phase, in that it had to be shortened from 1 year to 6 months because of interruptions due to the covid safety duties of staff and strategies implemented by the hospital, and to meet the deadline to complete the PhD. During the COVID19 lockdown time, researchers were not allowed onsite, and no research was allowed to be carried out due to COVID19 strategic plans. On 05-10-2020 the Research and Governance department of the site started the process of ethical approval, and this was completed by 18-11-2020. Unfortunately, due to COVID19, the research was interrupted again. At the beginning of June 2021, the research restarted with the site and a decision was made by the occupational therapy service staff that the study would be remotely led by the PhD researcher, due to the COVID19 strategies fluctuating locally. There was another interruption to the research mid-November to early December 2021 due to an increase in COVID19 patient numbers in the hospital. Hence, one cycle of the SVM process was undertaken over a 6-month period, January to June 2022, with no observation of the

CCU OT staff doing their daily work due to hospital guidance. Observation of staff doing their work is required in the SVM Check phase (Zokaei et al. 2011), but this was somewhat remediated through the staff having access to the PhD researcher to talk through daily activities and concerns as and when they required; and the evaluation of the outcomes of this was undertaken in returning to the Check phase, named here as Check phase 2.

SVM is a systems thinking approach for service improvement, as it applies systems theory, double loop learning and intervention theory (Zokaei et al. 2011). Senge's (1990, reprinted 2006) seminal book 'The Fifth Discipline' describes systems thinking as a conceptual framework built on fifty years of collated theories and tools to understand the connections and patterns that lead to how a system behaves, to then understand how to make changes. These theories help to inform how to understand the behaviour of the CCU OT service (system) from many perspectives, thereby helping to evaluate how the service is meeting the value demand, that is the service meeting the demands of the service users (Seddon 2003, 2005) (e.g., getting ready to go home from CCU). If value demand is what the service users want from the service, then failure demand is described as the service failing to do what is supposed to be done to meet service user demand (Seddon 2003, 2005) (e.g., CCU OT service missed intervention sessions). The theories also help to determine what the factors are that are impacting on service delivery when seen as a whole (Seddon 2003, Zokaei et al. 2011). Figure 5.1. illustrates the service improvement design applied to the CCU OT service viewed from the systems thinking paradigm.

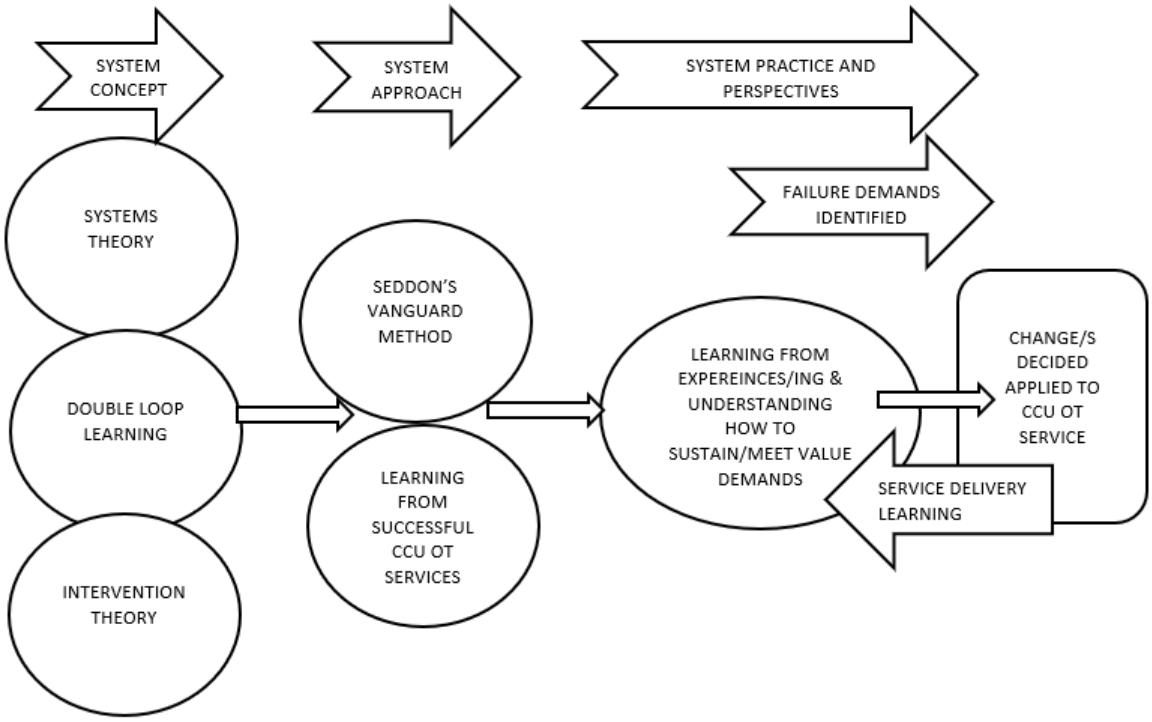


Figure 5.1. Critical Care Unit Occupational Therapy Service Improvement Method Design – From Theory to Application

In chapter 1, service improvement was explained as a wicked problem, as it is a complex problem with many different perspectives for potentially many solutions. Hence, a pragmatic solution can be found that is right for now. This is because the parts of the service are dynamic and the solution is context and time dependent and formed using the current available resources and stakeholders (Grint 2008, The Health Foundation 2010, Nuffield Trust 2018b). The solution will also be able to inform the wider system that the service sits in. Wicked problems arise because of how the system is behaving in reality, as opposed to how the system was intended to work, systems thinking offers a way to resolve this conflict (Cabrera and Cabrera 2015).

The initial agenda for the service improvement from the CCU OT service staff was to reduce the number of missed treatment sessions for patients as they knew from their own data that this was high and assumed that this was due to shortage of staff. This has a potential of delaying discharge from CCU, if for example the patient with delirium is allocated for CCU OT and they are delayed in their treatment with the patient, then this could have added negative health consequences for the patient

and lengthen their stay on the ward (Salluh et al. 2015, Schubert et al. 2018). Through the check phase of the SVM systems thinking approach, systems thinking tools were used. Figure 5.2 illustrates the systems tools that were used to assist the CCU OT staff in evaluating their service in the Check phase of SVM, iceberg model, run charts, ladder of inference and workflow map. These tools gave the staff space to deeply interrogate their service.

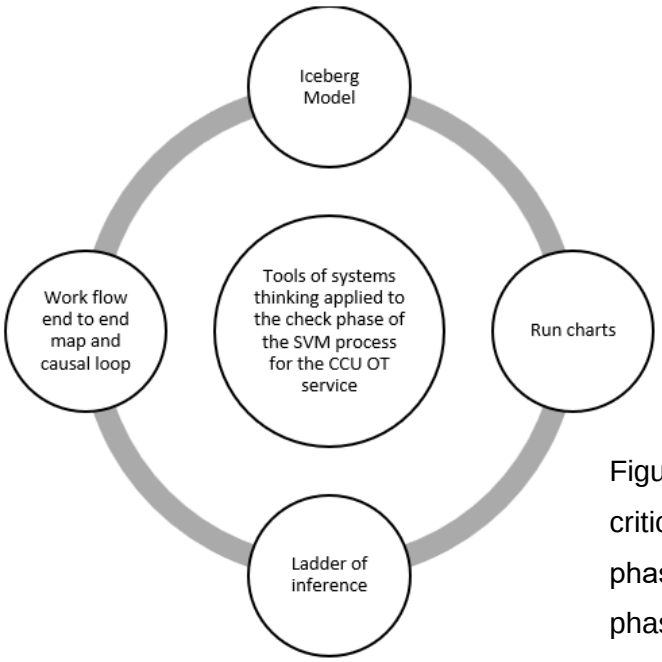


Figure 5.2. Tools of systems thinking applied to the critical care occupational therapy (CCU OT) check phase of the Seddon's Vanguard Method (SVM) 3 phase cyclical service improvement process

The iceberg model is prompting to look beyond the surface, i.e., the analogy is to look under the water (deep interrogation) beyond the visible tip of the iceberg above the water (beyond the superficial), because most of the body of the iceberg is under the water (depths of the topic). This was enabled here by giving time and space for the CCU OT staff to explore the patient feedback and their service through deep discussion and critical reflection, looking beyond the surface, and facilitated by the researcher, e.g., reflecting back to staff their words, or prompting by reusing a topic the staff raise and posing it as a question to the staff. Run charts were used to identify patterns of the service delivery over time, using data from e.g., missed patient sessions, length of days between referral to 1st contact. The ladder of inference is used to understand beliefs and truths (Senge et al. 1990), this was explored during the service evaluation discussions, e.g., defacto purpose. A flow of

work was produced, which included causal factors that hinder the work to lead to failure demand.

5.2. Understanding the data from Check phase 2

The data not only answered the research question, but it also highlighted the ongoing challenges for the CCU OT staff to deliver their service. The SVM process also enabled understanding for the staff regarding their struggles with their professional identity and how they were developing a changed way of being. Nissen et al. (2022, p.1) reviews several descriptions of professional identity and summarises that "*professional identity, the individual's identity is built up and created through the relationship between the individual and his or her surroundings*". Furthermore, professional identity can be described as a cluster of characteristics, values, beliefs, motivations, and experiences with which a person defines their professional being and work (Nissen et al. 2022), and the identities are challenged by systems (Mackey 2007).

5.2.1. Typology of struggle for the CCU OT to deliver service improvement

The challenges for occupational therapy service delivery are identified in the qualitative themes from the post research implementation period evaluations with staff, and the service level outcomes results are service performance expressions of these themes (see table 5.1).

Table 5.1 Relating the themes to the outcome measures identified by staff and from the literature

After research qualitative themes indicating challenges for service delivery	**Is the qualitative theme a system issue yes/no**	**The chosen outcome measure from the research that theme/s potentially relates to**
Shortage of staff	yes, as it contributes to the flow of discharging critical care patients	Missed treatment sessions Run charts Sick days Motivation

Responsibilities from job description	no	Caseload distribution Days to 1st contact with patient
Funding arrangements for CCU OT service	yes, as funding staff and ringfencing (protecting) staff for critical care service, hence, contribute to the flow of discharging critical care patients	Missed treatment sessions
Bed flow management outside of critical care wards	yes, as CCU OT staff taken away from critical care work, hence it contributes to the flow of discharging critical care patients	Missed treatment sessions Caseload distribution
Feeling unsupported or unchallenged by the system to develop	yes, capability and capacity of CCU OT staff, hence it contributes to the flow of discharging critical care patients	Sick days Motivation
Staffing issues	yes, if staff concerns are not heard and acted upon, it can affect morale and staff retention, hence, contribute to the flow of discharging critical care patients	Missed treatment sessions Caseload distribution Run charts Sick days Motivation

As Seddon (2003, 2005) reiterates in his books it is systems failures that lead to staff engaging in ineffective work practices and processes that lead to negative/unwanted outcomes. SVM is concerned with improving service effectiveness not efficiency, because if a service is effective (activities/processes – doing the right things) they suggest efficiency (productivity – getting things right/being timely) will follow, as

waste coming into the system, and hence failure demand will be reduced (Hood et al. 2021, Zokaei et al 2011, Middleton 2010). This relates well to Drucker's (1986, p. 36) frequently quoted statement: "*Effectiveness is the foundation of* [service] *success - efficiency is a minimum condition for survival after success has been achieved. Efficiency is concerned with doing things right. Effectiveness is doing the right things*". All, bar one of the scoping literature review papers, demonstrate this, for example improved operational outcomes for an in-patient stroke service (effectiveness), resulting in cost savings and requiring less beds for the service (efficiency) (Allder 2012).

The themes from the research are not only answering the research question because they related to the outcomes identified by the CCU OT staff to analyse, but also the themes are raising the struggles to deliver service effectiveness, and hence the service, for CCU OT staff. Moreover, the service level (operational) outcome measures identified for the research, by the CCU OT staff, are measures of service effectiveness.

5.2.1.1. Staff shortages in CCU OT service

Staff shortage (staffing levels) is a service level outcome, and the research did not result in change to improve the outcome but did highlight this as a struggle for CCU OT staff. The CCU OT manager and staff identified that the staffing level needed to be improved as it is not meeting The Faculty of Intensive Care Medicine and Intensive Care Society (2022) guidance, for occupational therapy staff in critical care wards. As exampled by Ms Orange the manager's quote *"…we aren't quite there with numbers and doing everything we want to do with the patients. We're not possibly still not hitting the ideal ICS* [Intensive Care Society] *guidelines that we should be hitting."*
Ms Blue continues the theme of under staffing in the CCU OT service by commenting that *"You can't expect even more short staff post pandemic to pre pandemic to meet that same level."* Ms Blue continues on that shortage of staffing level is on her mind *"I think on getting more people on the ground."*. The quotes indicate the concern the manager and Ms Blue, a CCU OT staff, have regarding the continuing shortage in staffing levels for the CCU OT service.

During the research implementation timeframe, the CCU OT staff were at 0.033 per critical care bed, with two full time and one part time staff, 2.25 whole time equivalent (WTE) of staffing, there are three critical care wards with 22 beds each. Hence it is understandable why the data were showing a high percentage of missed sessions, 57% before the SVM intervention period, and at the end of the research period this had increased to 61%, during this latter period one staff member had not taken up any critical care patients. As reported by their research participants, Algeo and Aitken's (2019) study identified that none of their CCU OT services met The Faculty of Intensive Care Medicine and Intensive Care Society (2015) guidance for occupational therapists per critical bed, being 0.22 (2022 guidance is 0.23). Algeo and Aitkin (2019) estimated from the participants' evidence that their reality was a 0.003-0.1875 whole time equivalent per critical care bed. For the run charts that were showing out of regular pattern points of working, CCU OT staff reported that these were due to lack of staff availability.

By the end of the research timeframe the 4 staff of the CCU OT service were down a further two, as Ms Purple and Ms Blue left the organisation. This talks to the turnover of staff due to existing shortages of staff from the NHS Providers report (2022). Furthermore, the NHS Providers 2022 'Workforce Planning Survey' report of 142 Trusts in England found strong themes, that shortages of staffing closed services or reduced their capacity adding to the backlogs, and also resulted in high turnover of staff leading to high uptake of costly agency staff. RCOT (2022a) signed a joint letter with over a hundred health and care organisations, to the Chancellor, to deal with the current shortages and chronic underfunding of the health and social care services. This included that overstretched services due to staff shortages will lead to staff stress and more staff leaving their jobs (as in this study), leading to more vacancies, amongst other negative consequences.

Ms Red, as an example of the effect of staff shortage on a member of the CCU OT staff, commented how the staffing levels were making them feel in relation to the wider team, as they couldn't keep up with the multi-professional team meetings: *"I don't feel like I have been able to do that much in the mdt* [multidisciplinary team]. *Just because I've not I actually do not feel like still been able to have enough time don't feel that I*

have enough time so that I can come …. I feel disconnected." Consistently attended multi-professional meetings and reviews have an impact on effective discharge planning, hence staffing levels to support this is indicated to meet capacity (NHS England 2022a). The capacity issue is having an impact on CCU OT staff missed intervention sessions.

This discussion has built an argument that although the impact of SVM on the service level outcome of staffing levels did not improve it, the SVM process did highlight that good staffing levels as a contributing factor for effective service delivery, to retain staff, but mostly to deliver what the patient needs, value demand and hence to deliver an effective service. So, there is a potential reciprocal relationship between effective service delivery and staffing levels for the CCU OT service and this is illustrated in figure 5.3.

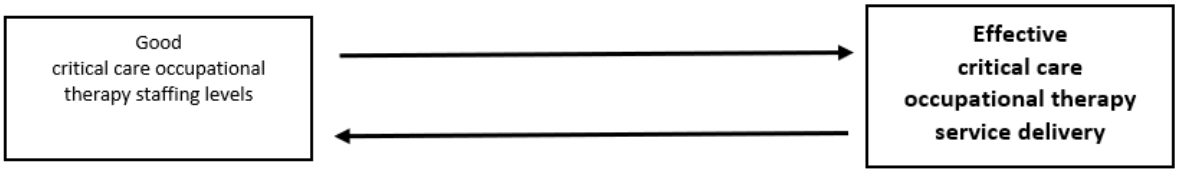


Figure 5.3 Diagram indicating the potential relationship of critical care occupational therapy service effectiveness with the research theme of staffing levels

5.2.1.2. Responsibilities from job description

The job description appeared to add to the perceived limitations of autonomy of CCU OT staff and prioritising CCU OT work. This is represented by the comment from Ms Orange, where she expresses that the CCU OT staff *"a lot of the time"* are being re-directed to do other work away from CCU; "[…] *you know frustration of everybody that you can't quite build on the blocks you've made in its entirety because you have an acute hospital behind you needing to discharge people. And you know I worry about job satisfaction for them because they come into the job to do this but some of the time quite a lot of the time their doing what they weren't in the job."*

The influence of the job description on work is further iterated by CCU OT staff, for example, Ms Green expressed how the job description was impacting on her CCU OT service work; *"Because I think my job description is very clearly about the post. Like it*

says CCU and respiratory and makes reference to helping out respiratory and seeing patients as needed. It's not that I can say I'm purely one. My job description clearly covers both." The job description appears to give the organisation 'power' to re-direct CCU OT staff to manage bed flow to facilitate discharges. This further suggests that the work is not patient facing but organisation facing, and the SVM literature indicates that this leads to further failure of services (Seddon 2003, 2005). This is seen in the results that the missed sessions have increased from 59% to 61% during the service improvement implementation period, where there was one less staff, a part time grade 7 left, and the grade 6 was unable to take on any CCU OT cases because they had too many wider hospital discharges to facilitate.

Job descriptions are tailored to maintain maximum employer flexibility whilst maintaining the legal contractual responsibilities and keeping the benefits weighted towards the organisation (Fowler 2000). Employees have to sign off on the job description when hired. Changing job descriptions can be negotiated between management and staff but is in the power of management and may have legal processes to follow (Indeed 2021).

In employment engagement theory there is a concept termed as 'job crafting', a work design/change process, to align the work with staff work needs, goals, and skills to help change the meaning of the work to (re)motivate/(re)engage the employee (Truss et al. 2014). Ms Blue in her comment suggested she is attempting to do this by contacting seniors in power to make the change happen she is looking for, *"I've got a meeting with the medical director of critical care and nursing directorate coming up as well, that I can push for, to think about occupational therapy services across sites."* This change using job crafting is processed through adapting the characteristics of the work and the interpersonal environment of the work, which in turn improves job satisfaction and reduces burnout (Truss et al. 2014). Ms Blue recounted how she contributed towards this by her need to work on projects on top of her job duties; *"I'd never be happy just to do my job and go home I need other things to do the other drivers I'd be really bored if I didn't have other projects going to hang on. That's just how I'm built".* Ms Green supports the job crafting process but by relating back to the roots of occupational therapy; *"Yeah what I was saying was kind of remembering what*

occupational therapy is and what our profession is actually I guess it is going back to the roots. And actually yeah like almost rethinking back to why we do things". Job crafting is a way for organisations to engage with employees, to be challenged by them regarding how the work demands and resources are impacting their work. Giving the employees autonomy to craft their jobs, so that it meets their needs and delivers the organisations intentions, and effectively meets service user demands. Tims et al.'s (2013) and Bhagat and Arora's (2021) research together identified that job crafting reduced structural barriers, improved emotional impacts (e.g., reduce burnout) and opened up opportunities for staff creativity/innovation (e.g., new projects).

This may be a contributory factor as to why, between the part time CCU OT lead and the full time grade 7, the time taken to see a patient on CCU from referral to 1st contact was improved to a mean of 0.3 days in 2022 Jan-Jun with data from 29 patients, compared to years 2019, 2020, and 2021, (30 patients each), with a statistically significant difference between 2019 and 2022 (see Table 4.14). The reason for suggesting that it might be a contributory factor is because job crafting is due to abductive reasoning, in that the premise of job crafting is a reality, however, the relationship between job crafting and the outcome that is suggested is based on the evidence from this study and the existing literature, hence less certainty and more a possibility, until the research evidence grows.

Job descriptions could be an explicit springboard for job crafting for this CCU OT staff group to enable them to design the work in collaboration with management, or wider, to meet their needs and promote their autonomy and development to maintain their wellbeing and sustainability in the workplace. This in the end is for better service for the patients. There is a relationship between job crafting, job satisfaction and wellbeing and improved engagement in work (Bhagat and Arora 2021). Nayani et al. (2022) explained from their research that this occurs due to a renegotiation between employer-employees converging on what matters to both, such as effective service delivery. Figure 5.4. summarises the discussions from sections 5.2.1.1 and .2.

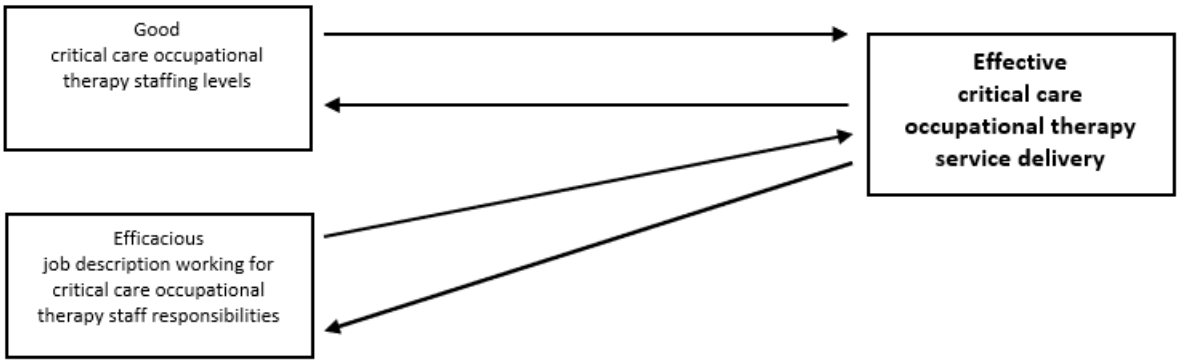


Figure 5.4. Diagram summarising the potential relationship of critical care occupational therapy service effectiveness with the research theme of staffing levels and job description

The impact of SVM on service level outcomes here, is on highlighting how to improve on staffing levels/retention through improving the work experience of the CCU OT staff in this case, through the job description that works for them from the start. However, if the job description does not fully meet this then their professional autonomy could be improved through job crafting. Hence, this again is bringing to light another struggle for the CCU OT staff in doing their job effectively in this case, building the notion that there is a potential reciprocal relationship between an efficacious job description and service effectiveness.

5.2.1.3. Funding arrangements for CCU OT service

Occupational therapy is not related to diagnosing or saving/sustaining life in critical care, but once the person is stable and conscious the occupational therapists work with the patient on delirium, psychological and cognitive aspects, physical abilities, splinting upper limb/hands, seating, abilities to perform in activities of self/personal care and with family (Firshman et al. 2020). This would not in itself be immediately attractive to funders who would want evidence that this profession's involvement in critical care, for example, contributes to reduction in length of stay on the wards. This is indicated in the following quote from Ms Orange; *"… we've been lucky, if that's the word as well, that I could start it with the money I had and that we've had investments since covid in to CCU. And because we already had an OT there they could see the benefit of it there it was an easier job to try to increase the amount of people in the team …. If we can show that having OT or physio or whatever down there reduces length of stay or reduces ventilation days then you've got something that will that the trust will go oh ok that will be*

good money saving we'll invest." Furthermore, a couple of quotes from Ms Blue indicated that they would feel valued if the money was ringfenced for CCU OT service/staff; *"the critical care OTs and the respiratory OTs so the budget, well I don't have much to do I don't really have anything to do with the budget, but essentially they are under one pot I'm guessing"*, then on a different occasion adds that; *"About ring fencing critical care funds and actually the data really shows that actually therapists that are ring fenced purely in critical care they take part in research they go to the governance meetings. They're involved in senior leadership stuff, do projects. And the people that don't are sat very much outside. So it does make a huge difference gaining ringfenced funding".*

However, regarding funding, it may be better for the CCU OT staff to make a case for their service using the good practice guidance for critical care services, which states the number of occupational therapists required per bed in critical care, hence an affirmation of the necessity for occupational therapists (The Faculty of Intensive Care Medicine and Intensive Care Society 2022). Rather than focussing on an efficiency measure, i.e., length of stay for patients on critical care wards, SVM case stories in the scoping review (Chapter 2) show that focussing on service effectiveness, leads to less failure demand (e.g., missing patient sessions), enabling efficiencies to follow (e.g., reduction in length of stay or reduction in costs, (Seddon 2005, Middleton 2010, Zokaei et al. 2011)). The 2015 Faculty of Intensive Care Medicine and Intensive Care Society did state that the good practice guidance was 45 minutes of occupational therapy 5 days a week for each patient. This is no longer in the 2022 guidelines, where it suggests that the CCU OT service take a flexible approach dependent on the case mix and level of needs of patients on the ward. So, in section 5.2.1.2. the notion of a reciprocal relationship between the job description and service effectiveness for the CCU OT staff is presented. Hence, clear job descriptions that lay out what is required from CCU OT practitioners as applied to the good practice guidance will support staff roles and responsibilities, and staffing levels, to deliver an effective service that is centred around the patient. Hence data collection will be key for the CCU OT staff and manager to attract funding for a good level of staffing, but the data does not necessarily have to be focussed on length of stay measure.

Ms Orange suggested an outcome measure that is not being applied currently; *"…you would hope that if OT down there would improve patient experience if we did friends and family test, tests we would get high recognition because we involve the family & diaries that OTs have initiated down there."* Friends and Family Test was introduced in 2013 by the then Department of Health (2012) as a compulsory service effectiveness measure, to gather the service patterns and trends over time to inform continuous service improvement and culture change. The Friends and Family test has resulted in 75 million pieces of feedback data making it the largest data set of patient feedback in the world and has resulted in indicating nine out of ten patients are positive about their experience (NHS 2022b). However, because of invitation and respondent biases these measures cannot be used to compare services, which is agreed by NHS England (Robert et al. 2018), e.g., if respondents have had a positive experience they would likely respond positively to the test. The Department of Health (2012) did add in their document that The Friends and Family Test would have to be used in conjunction with other measures to provide a fuller picture of effectiveness thus efficiency of the service. Robert et al. (2018) added that although The Friends and Family Test is no longer mandatory, it still provides a local and broad 'barometer reading' of whether a service is meeting patients' needs (NHS England 2020) and could be a useful dataset, when used amongst a suite of other measures, to support being a patient-centred service. However, The Friends and Family Test not being mandatory does free up services and organisations to identify alternative relevant measures that would speak to funders. Hence CCU OT staff should consider outcome measures that showcase occupational therapy.

The CCU OT staff had already decided that a measure they wanted to use is the GAS (goal attainment scale) (see section 4.5.5.), there is a substantial body of evidence to indicate that this outcome measure is good for developing co-produced goals and aids decision making and provides a way to statistically analyse the service (Turner-Stokes 2008). The limitations are that it is time consuming to identify goals and a minimum of five goals should enable capturing the patient's priorities (Turner-Stokes 2008). The FIM FAM (Functional Independence Measure and the Functional Assessment Measure) is a measure that captures the functional change of the patient through the rehabilitation process and is used with teams that are

multi-professional (UK FIM + FAM USER GROUP 2010). The FAM is an outcome measure that would showcase occupational therapy as it has items that are part of activities of daily living (ADL) that occupational therapists traditionally assess for. On the FAM form the relevant sections are: self-care (e.g., grooming and toileting), bowel and bladder (includes bladder and bowel management) , mobility (e.g., bed transfer and wheel chair mobility), communication (e.g., comprehension and reading), psychosocial (e.g., social interaction and use of leisure time), cognition (e.g. problem solving and safety awareness), impairment set (neurological impairment categories), and extended ADL (not relevant for CCU OT service as their patients would not be ready for such activities, e.g., included meal preparation and laundry) (UK FIM + FAM USER GROUP 2010). Again, the service effectiveness can be evaluated through this measure. So, using these types of outcome measures could help to improve staffing levels and hence staff shortages, as it could direct funding towards the service as it shows that it has impact on service effectiveness.

A UK workforce survey of 245 critical care services identified that daily input for patients was increased when funding was protected for critical care, this was much more evident in CCU OT services "where daily input varied from 82.1% of units protected service compared to 10.3% in those without ($p<0.001$)" (Twose et al. 2023 p.1). Hence to attract funding (a service level outcome) on top of the current funding to improve service effectiveness, the CCU OT service in this case, the manager and staff need to further review what are the outcome measures being used, ask are they showcasing occupational therapy and evaluate how they will matter to funders by working with the funders. What matters gets action (Doerr 2018), so occupational therapists have to show that what they are measuring matters to funders, especially that it matters to patients and families. Service level outcomes are measures of service effectiveness, if a service is shown to be effective it will attract funding. Furthermore, if effectiveness is shown then this will enable opportunity for renegotiation of staffing levels and job descriptions. Hence there is potentially a reciprocal relationship between CCU OT service effectiveness and funding arrangements. The SVM process did not impact on the service level outcome of funding for this CCU OT service, but it did highlight the struggle the CCU OT staff

have in relation to this. Figure 5.5. summarises the discussions from sections 5.2.1.1 to 5.2.1.3.

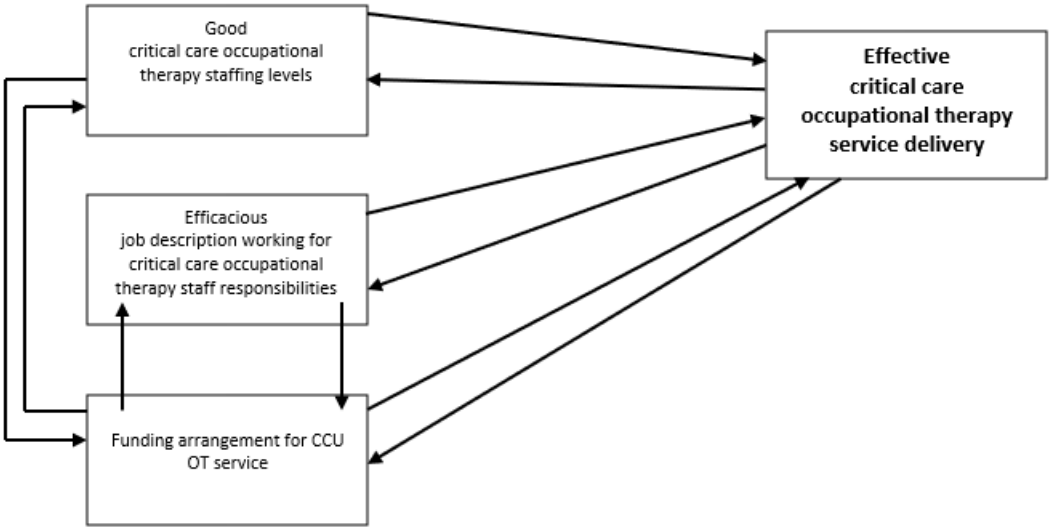


Figure 5.5. Diagram summarising the potential relationship of critical care occupational therapy service effectiveness with the research theme of staffing levels, job description and funding arrangements

5.2.1.4. Bed flow management [outside of CCU OT service]

Both the staff and manager identify that CCU OT staff work is not ringfenced solely for CCU. When any bed blocking occurs in other parts of the hospital, the CCU OT staff are pulled from their work to deal with enabling discharges. These are seen in the example comments from the manager and CCU OT staff, Ms Green and Ms Purple. Ms Orange comments that *"They* [CCU OT staff] *get pulled from pillar to post really … when it comes to being able to discharge 10 people on the wards to free up beds it isn't such a critical service to the trust. So as much as I try to sort of ringfence them on CCU they do get demands on their time … And I try and keep them as much as possible in critical care. But there are times when a discharge from hospital trumps the critical care patient yeah".* This comment is further clarified by Ms Green, explaining that CCU OT staff are not prioritised/ringfenced for CCU service; *"Although critical care is a priority. If patients are not having input for discharge for home that is probably going to be seen by the higher up as more urgent, as then your blocking beds and poorly patients then need those beds".* Ms Purple adds support for Ms Orange and Ms Green's comments; *"And it's*

the same for all of us [..] *and I have to often get called from critical care to help on the wards for discharge planning".*

Managing bed flow is important as the NHS cannot run at 100% occupancy as then it will not be able to deal with variability in demand for beds from unwell patients (The Health Foundation and Nuffield Trust 2022). Seddon (2005) states that if the systems issues are not dealt with, and it appears to survive on, going from one crisis to another, this will take away the service's ability to respond in an effective way to variability in demands from patients, thus creating more ineffectiveness (waste demand) in the service until it cannot perform what it was there for. The NHS have been given the target of reaching 50% of their discharges on time (Limb 2022) and Discombe (2022) identified that most hospitals failed to meet this target. However, 60% of NHS discharges are delayed, termed as blockages to discharge, and thus the continuity of bed flow is not maintained, and these blockages are said to be due to shortages in social care and home care, furthermore, delay in discharges leads to poor patient outcomes (Limb 2022).

Therefore, taking CCU OT staff away from their roles is a temporary 'sticky plaster' for dealing with the wider systemic issues affecting bed flow in the local organisation, and wider in England. Taking the staff away from their critical care roles is impacting the number of missed sessions that are occurring, the current number of missed sessions has risen from 59% to 61% during the service improvement implementation time period, when the staff were down one part time grade 7 and the grade 6 had been unable to carry any patients from CCU due to bed flow management duties to discharge patients in the wider hospital. It has already been identified in literature that targets, which are generally arbitrarily defined, do not work, in fact in some cases they make the situation worse (Black 2017, Anandaciva and Thompson 2017, Nuffield Trust 2019a). The Department of Health and Social Care in March 2022 directed that NHS organisations must have a systematic planned approach with multiagency and multi-professional collaboration to facilitate patients out of hospital who are not requiring acute care. Adding that patients who are well do not have a right to stay in hospital (Department of Health and Social Care 2022).

Hence the SVM process has highlighted that the impact of CCU OT staff managing the bed flow in the wider organisation is potentially contributing to the service level outcomes of shortage of staff and missed sessions in the CCU OT service. Considering the information presented, taking CCU OT staff away from their work is not dealing with the systemic problems that are creating discharge congestion in the hospital. Taking CCU OT staff away from their work to manage bed flow management outside their service can have a knock-on effect on service delivery effectiveness, which the missed sessions data represents, which in turn reduces the staffing levels of the CCU OT service when discharges are prioritised in the wider organisation. Thus, CCU OT staff engaging in bed flow management for the wider organisation potentially relates reciprocally with delivery of CCU OT service effectiveness. Figure 5.6. summarises the discussions from sections 5.2.1.1 to 5.2.1.4.

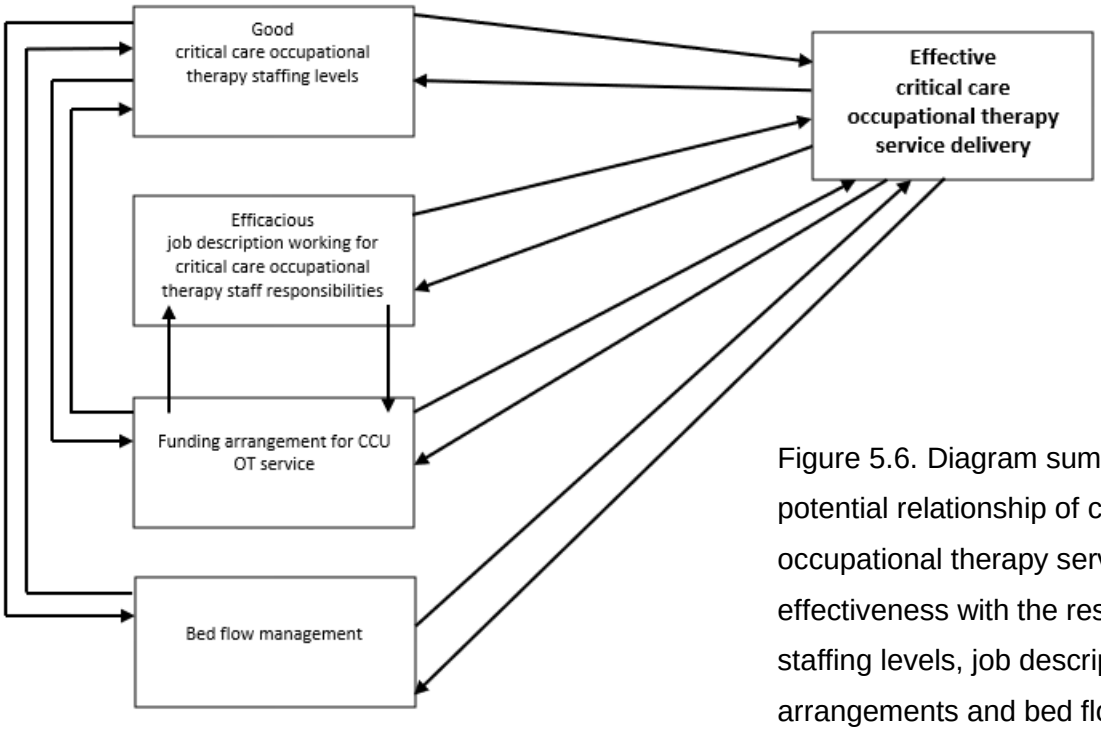


Figure 5.6. Diagram summarising the potential relationship of critical care occupational therapy service effectiveness with the research theme of staffing levels, job description, funding arrangements and bed flow management

5.2.1.5. Feeling unsupported or unchallenged by the system to develop

Both the staff and manager identify that CCU OT staff need the organisation to support CCU OT staff development, as exampled by these quotes from the manager and a CCU OT staff. Ms Orange identifies some of the barriers to CCU OT staff

development; *"So, the barriers would be upskilling staff appropriately to be able to meet the needs of the patient. In our team at the moment, we probably only got two part time OTs who would be competent to do all that, all the OT care that's required by the CCU, and we got one more that's learning the ropes and we've got one that should be in the team but due to staff shortages is out on the wards. So, I think we have the idea of what we want to do and we have the paperwork all sorted it is just the workforce that we don't have in place with all the right skills. And the teaching you know the OTs that are competent do as much teaching as they can with the ones that are learning. But there's other demands on their time being on critical internal critical and having to discharge people from the wards".*
Ms Blue reminisced that the training she has provided doesn't get applied due to the wider hospital commitment; *"And actually, that learning, and development's been lost, because actually all that learning all that teaching, and development of new staff has been gone".* Ms Blue adds the despondence she feels through her feelings of not being heard regarding her development needs; *"So, to do that for yourself all the time makes you feel like your oh I don't know. You can agitate for so long then you get to the point where you just, the drive has gone. Cos you just think what's the point. No-one's listening to me anyway. You just want to do your job and go home rather than drive change that's what they want you to do. There's nothing wrong with that. It's just I'm not built that way never have been"….."You know the bits where I sort of always say I don't get much challenge and that sort of thing I always feel bad about saying that".*

The staff refer to appraisal and goal setting to identify learning and barriers to meeting them, as exampled by this brief dialogue between two of the CCU OT staff; Ms Blue *"We had a meeting with our boss to talk about how we can get Ms Green into her post because it's been nearly 2 years when actually she's not been sitting in the post we were meant to be doing. And it came to a head because we looked through your appraisal when actually the goals were lovely goals, but they are all to do with critical care and we can't meet any of them. Because you are not in that job so that sort of came to a bit of a head didn't it and we had a meeting."* Ms Green responded; *"Yeah those are the skills I want to develop because they're really good skills to have."* Ms Blue identified that the Intensive Care Society (2022) has brought out the 'OT pillars' to guide continuing professional development (CPD) for CCU OT practitioners, as it is a recent and

growing area of interest for occupational therapists; *"I think there's a lot going on nationally as well about critical care occupational therapy. So I think this week the OT pillar is coming out"* […] "*It's from the ICS cos they're launching it".*

The quotes provide a sense that the CCU OT staff are not being able to implement their job crafting ideas nor engage as they would like to in their continuing professional development (CPD). The CCU OT staff potentially could negotiate to meet their CPD and job crafting needs, by raising the CPD requirements of registration as directed by the Health and Care Professions Council (HCPC). To keep registration with the regulatory body, HCPC, occupational therapists must be able to evidence that they are keeping up to date with knowledge and skills to be safe to practice with patients (HCPC 2022a). If called upon they must be able to show to the HCPC CPD audit panel that they are keeping a portfolio that demonstrates they are meeting the HCPC CPD standards which are (HCPC 2022b): "*1. Maintain a continuous, up-to-date and accurate record of their CPD activities.*
2. Demonstrate that their CPD activities are a mixture of learning activities relevant to current or future practice.
3. Seek to ensure that their CPD has contributed to the quality of their practice and service delivery.
4. Seek to ensure that their CPD benefits the service user.
5. Upon request, present a written profile (which must be their own work and supported by evidence) explaining how they have met the Standards for CPD".
The CCU OT staff would need to be autonomously keeping this in check as this is their responsibility to maintain registration, but it is also a lever to negotiate some time for CPD, as a legal requirement of health and social care organisations to have registered practitioners working for them for patient safety. Ms Blue stated that for them to have time for CPD they have to have enough trained staff that can take over the work; *"And also thinking about services in critical care, if I do go off and do something else, I'd like to do or develop services elsewhere, then you need the staff that you trained here to actually to carry on doing the role …. Then I don't feel like I've done my job correctly because I haven't upskilled the staff to allow that. Not that it's totally my fault it's just the way it is".*

The NHS People Plan (NHS England 2021a) advises that, to recruit and retain people in the NHS, human resources and organisational development departments have a key role in putting in policies that look after staff, not only the safety in clinical work and wellbeing needs of staff, but also facilitate career progression through different opportunities, e.g., courses or mentoring. Again, this document could be a lever for negotiating CPD opportunities to support and challenge staff and affect retention of staffing levels. Ms Blue commented that discussions with the PhD researcher within this study process felt like mentoring for her; *"So I think like your mentoring and saying actually that challenge is ok, it's not challenging for challenging's sake it is an ok thing to challenge for and that's been quite helpful".*

The intensive Care Society (2022) identified that the added value of allied health professionals, such as occupational therapists, was prominent in the last few years due to COVID19, hence they identified a skills development framework for occupational therapists as part of their CPD in this specialism. Ms Blue refers to the pillars as endorsement of the profession in the specialism; *"Yeah, well they endorse the pillars. Yes they endorse the OT pillars through RCOT, they've seen and agreed it and stuff so".* The research process may have felt like 'mentoring' as this was not happening as part of Ms Blue's CPD.

Overall, the discussions in this section are showing that SVM has highlighted the potential reasons for benefits of CPD and career progression opportunities to retain staff, i.e., that is service level outcome of staffing level, and improve service delivery effectiveness, and if service effectiveness is shown it is a position of strength for renegotiation for CPD funds or other opportunities for career and staffing levels. If you have good staff levels in CCU OT service, then there may be capacity to manage bed flow management without being detrimental to the CCU OT service delivery. Figure 5.7. summarises the discussions from sections 5.2.1.1 to 5.2.1.5.

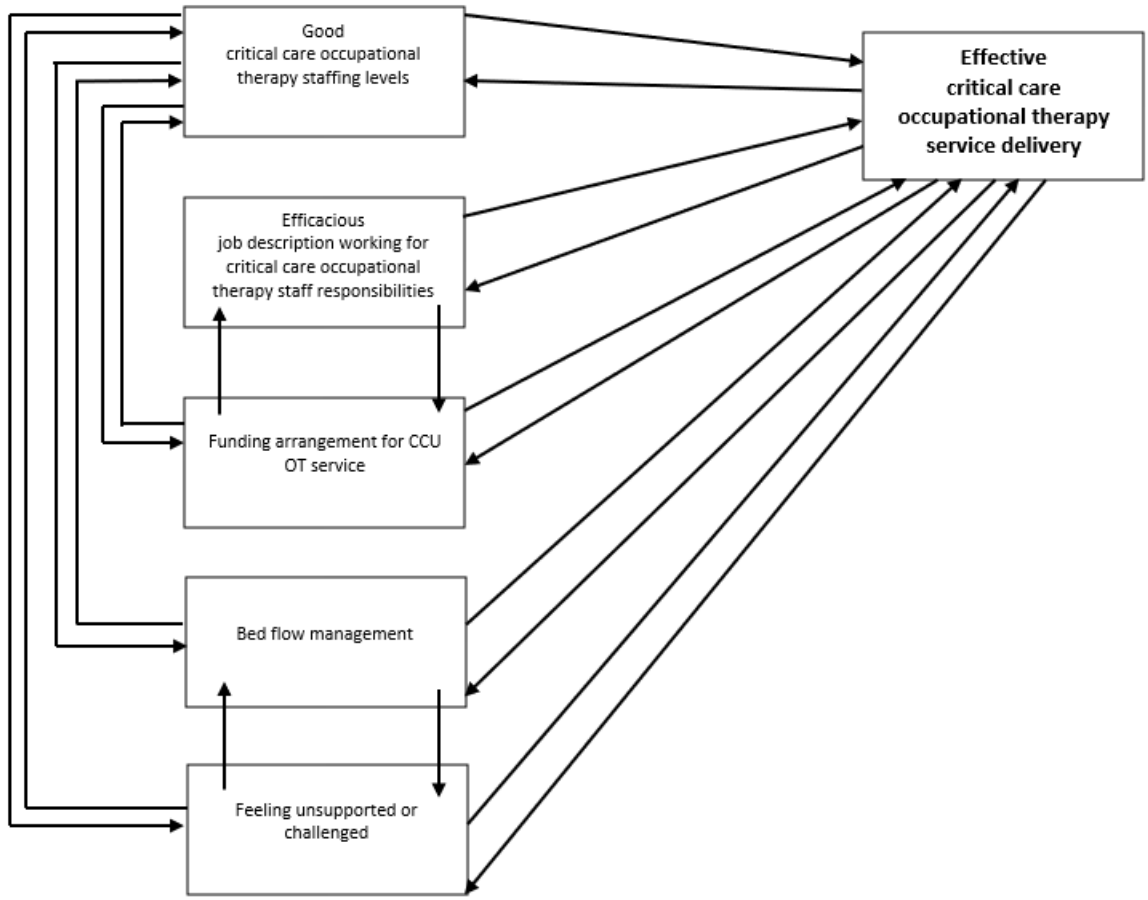


Figure 5.7. Diagram summarising the potential relationship of critical care occupational therapy service effectiveness with the research theme of staffing levels, job description, funding arrangements and bed flow management

5.2.1.6. Staffing issues

Both the staff and manager identify that CCU OT have staffing issues, in relation to capacity to engage fully in the CCU OT service to develop the service and hence themselves, thus affecting service delivery effectiveness. Ms Orange focuses on the CCU OT staff capacity in a comment *"… it is just the workforce that we don't have in place with all the right skills. So as much as I try to sort of ringfence them on CCU they do get their demands on their time … All the OT care that's required by the CCU, and we got one more that's learning the ropes and we've got one that should be in the team but due to staff shortages, is out on the wards".* Ms Blue, made quite a few comments on staff issues throughout the evaluation meetings;

-regarding a colleague; *"I struggle thinking about you. Like you're straddling you're on a fence and you're like being pulled in either direction, I want to be there but I need to* [be] *there. In my head I want to be there, but I am here, I just think if that was me I'd find it really stressful".*

-mentioning the challenges of changing work roles and responsibilities; *"So, it's very hard in the day to flip flip flip doing something and being invested in critical care and doing the service development things with the team, to then watch them having to work away from it to do* [e.g. bed flow work]"…*"So, it's time to give them* [occupational therapy staff outside of CCU] *more staff so that hopefully me being pulled is going to be less frequent"*;

-reiterating they want money exclusively for CCU OT service; *"I've got very frustrated. A little bit irate. And think the money would be better ring fenced under critical care is my own opinion"*;

-reminisced about being challenged in her previous job in another organisation and opportunities that arose from this; *"Where I came from, I was like challenged all the time. Like [asked] when you next speaking at a conference? What article are you going to write? How you going to when you going to post that? We need to get that on twitter. So I came here and it's almost like none of that. There's no challenge. There's no challenge of how you are going to run your service. There's no, the thing, [to be] brutally honest there's nothing."*

These comments are related to all the themes from sections 5.2.1.1 to 5.2.1.5., it appears from going through the SVM process that the staff know what they need but are struggling to be heard or resourced to enable change at 'shop' level. The effort-reward imbalance (adverse effects of lack of reciprocity at work) (Devonish 2018) may be in play for staff, hence may also relate to CCU OT staff in general, and research papers relate effort-reward imbalance to resulting in job dissatisfaction (Devonish 2018), and lack of staff development opportunities (Ge et al. 2021) which is the responsibility of the manager but ultimately the organisation to embed (NHS England 2021a). This can compromise service delivery as staff motivation for work may be dampened (Asgarian et al. 2022, Soegoto 2017), and job satisfaction has a knock-on effect on employee retention (Biason 2022, Truss et al. 2014). It is a fundamental human need to feel valued for our efforts and disappointment is felt

when that does not happen, if this is carried on long term it affects wellbeing (Devonish 2018). Looking at the motivation scores for the staff (see section 4.5.1.6.) over the research timeframe, indicate that:

> Ms Blue's scores suggest that she had become less motivated at work, not needing affirmation from people at work, nor being motivated by guilt and that she was engaging in activities at work due to her interest. Consequently, Ms Blue left her workplace to go to another job at a higher banding, end of September 2022. It could be that the CPD support and challenge required at work was missing (see quotes), hence she may have accepted the job that gave her a promotion to be challenged and the challenge is a CPD opportunity.
>
> Ms Red's scores suggest she is influenced less by external drivers to motivate her, but maybe driven by guilt, goals, and interest for work. Ms Red's reaction to Ms Blue leaving was in line with the drivers that were influencing her motivation to work as shown in her quote; *"Ms Blue will be leaving. So, I'm not sure about how I feel about staying honestly, so I, so that's something I need to consider".*
>
> Ms Green's lack of motivation and the need for rewards and avoiding punishment scores have increased, but reduced in motivation from guilt, goals and interest. This may be because Ms Green had been mostly taken away to facilitate hospital discharges and had zero caseload from critical care, within the research implementation timeframe.

The MMWS scores for the CCU OT staff indicate from self-determination theory that Ms Blue appeared to have more autonomy and competence and hence would be the most engaged with their work (Meyer & Gagné, 2008). Hence the SVM service improvement study impacted the service level outcome of staff numbers negatively in line with the 'staffing issues' theme, the OT staffing levels reduced by the end of the study timeframe. This reduction in the number of CCU OT staff numbers was potentially impacted by the staff not feeling challenged or supported for CPD, which could have a reciprocal relationship to service effectiveness (see sections 5.2.1.1/3/5). Figure 5.8. summarises the discussions from sections 5.2.1.1 to 5.2.1.6.

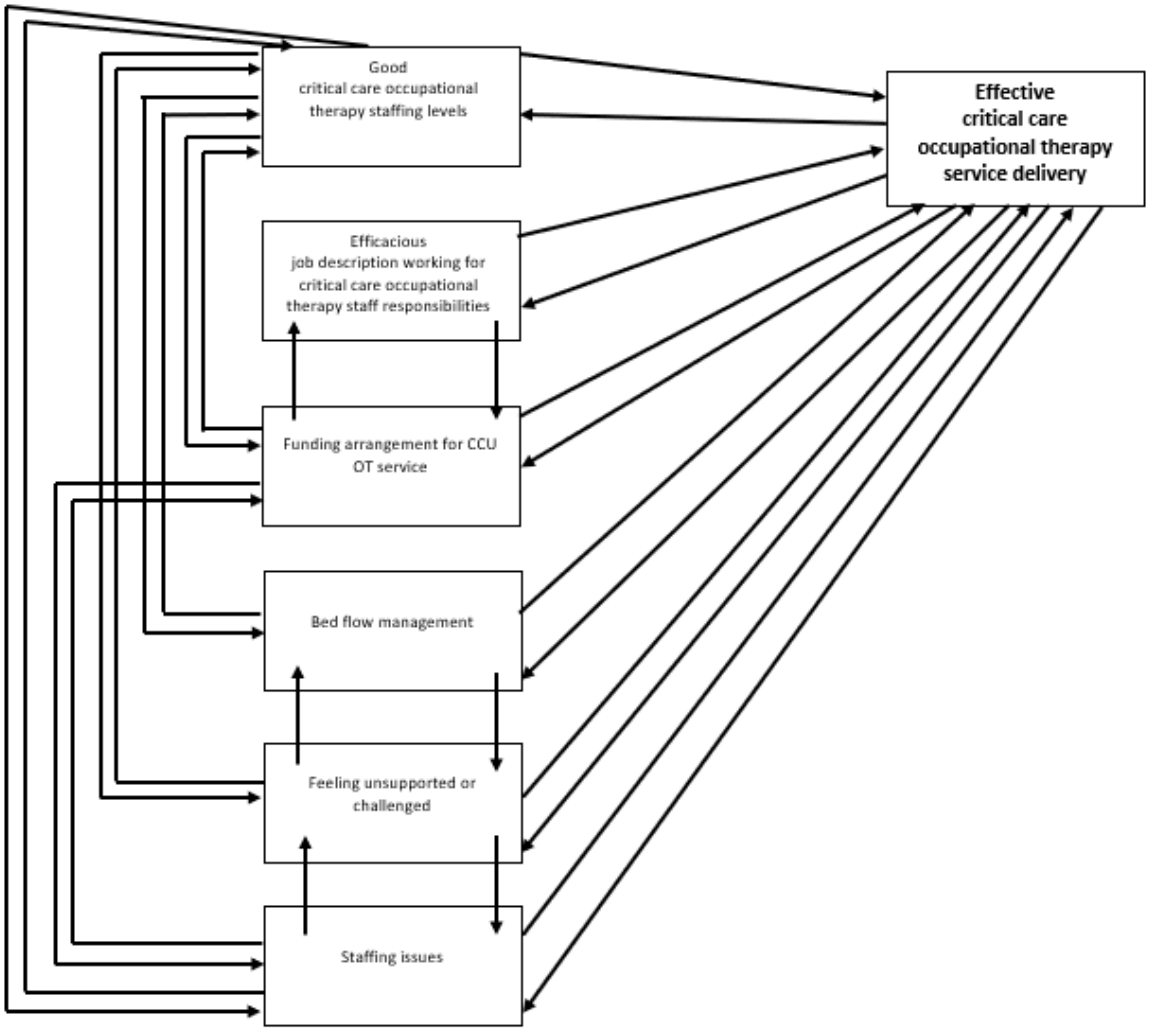


Figure 5.8. Diagram summarising the potential relationship of critical care occupational therapy service effectiveness with the research themes of staffing levels, job description, funding arrangements, bed flow management and staffing issues

Figure 5.8 although is presented in a linear illustration to show how the themes identified from the research data have a potential reciprocal relationship to service effectiveness and each other. But, as discussed in chapter 2, service improvement is a complex problem, and section 5.3.2. will pick up on the relationship of systems and complexity to the outcomes of this research. A system, i.e., CCU OT service, is dynamic in trying to maintain balance, equilibrium, i.e., delivering CCU OT effective service.

5.2.1.7. Theorising struggle in CCU OT service improvement

So, the themes and discussions from sections 5.2.1.1. to 5.2.1.6. are theorising the struggles of the CCU OT staff in this context to deliver an effective service and the research is producing a typology of the struggles for CCU OT staff in delivering an effective CCU OT service. The typology are themes identified in section 5.2.1. That is that the content of section 5.2.1. is theorising the struggles of the CCU OT staff to deliver an effective service as the research has gone through the process of developing an evidence informed question and analysed the informing literature, designed a research method, gathered data to answer the questions and understand the answers and then exploring possibilities from the research (Swedberg 2016). The term itself, 'theorising struggle' was heard by the PhD student researcher in a lecture on the topic by Professor Elelwani Ramugondo to the Johannesburg Institute of Advanced Study in September 2022, concerning social change. The word 'struggle' has been referred to in relation to CCU OT staff's continuing efforts to deliver an effective service, because they are striving to proceed to deliver an effective service within an environment that has barriers to progression built into the system, e.g., funding, bed flow (explanation developed from Collins online dictionary (2022) definition of 'struggle'). The process of theorising leads to, what Swedberg (2016) terms as a pre-study, i.e., feasibility study. This research could be described as a pre-study, in that it is exploring the feasibility of researching service improvement in a CCU OT service applying SVM as the service improvement method. At the end of the theorising process is explanation and sections 5.2.3. and 5.2.4. will pick up on explanations, but also add to the list of the typology of struggle for CCU OT staff to deliver an effective service. Just to put some context regarding the relationship of theorising to theory, theory is the end product of theorising (Swedberg 2012), such as Karl Marx's 'Das Capital', this started with theorising about communism, capitalism, and communities or; Taichi Ohno's, 'Toyota Production System', for production line service improvement that started with theorising about efficiencies, factory production lines and automation in factories.

5.2.2. Interpreting service improvement as a social movement

It may appear that framing the CCU OT staff's attempt for service improvement, hence service effectiveness, as struggle, would potentially situate the discussion in

activism. Struggles happen when there is imbalance in autonomy, power, relationships, resources, and much more. Ms Blue in some ways does link her experience to attempting change as 'agitation' (see page 156 and 189 quotes), which is a word that belongs in activism actions. CCU OT staff are quite small in numbers within the multi-professional team, which is dominated by a medicine-based focus, this may make them the 'underdog' profession. Hence, to be heard they may act like a mini social movement group, in fact Waring and Crompton's (2017) study on service improvement saw using social movement theories to empower bottom-up service improvement as beneficial to engage the top to care. They add that they were unsure how the theories would be effectively translated into practice, which would need more research. Social movements have always been used to radically mobilise groups/populations for societal invocation to enable change actions for shared causes, thus the conceptualisation of service improvement as a social microcosm of this (Bibby et al. 2009). Social movements are linked to activism and relates to service improvement for the CCU OT staff, because, for them, there is a power imbalance, and to equalise the space so that they feel they have autonomy and agency to make effective service improvements, so to help with this they need to collaborate cohesively and grow their supporters and enablers from the multi-professional team. This returns the topic to systems thinking approach where you understand who the actors within the different nested eco systems of the organisation and who the CCU OT staff could work with and influence directly or indirectly CCU OT delivery across boundaries, to improve service effectiveness (Meadows 2009), see figure 5.9 for actors in different parts of the organisation. The CCU OT service staff could make many collaborations with different actors in the organisation to help address the challenges they have identified through the SVM process, and the lead occupational therapist was attempting to see if this could happen through meeting with the medical directorate and nursing directorate (see page 208, quote at bottom of page). SVM could be said to create conditions for the staff delivering the service improvement change to become a microcosm of a social movement within their service and hence organisation.

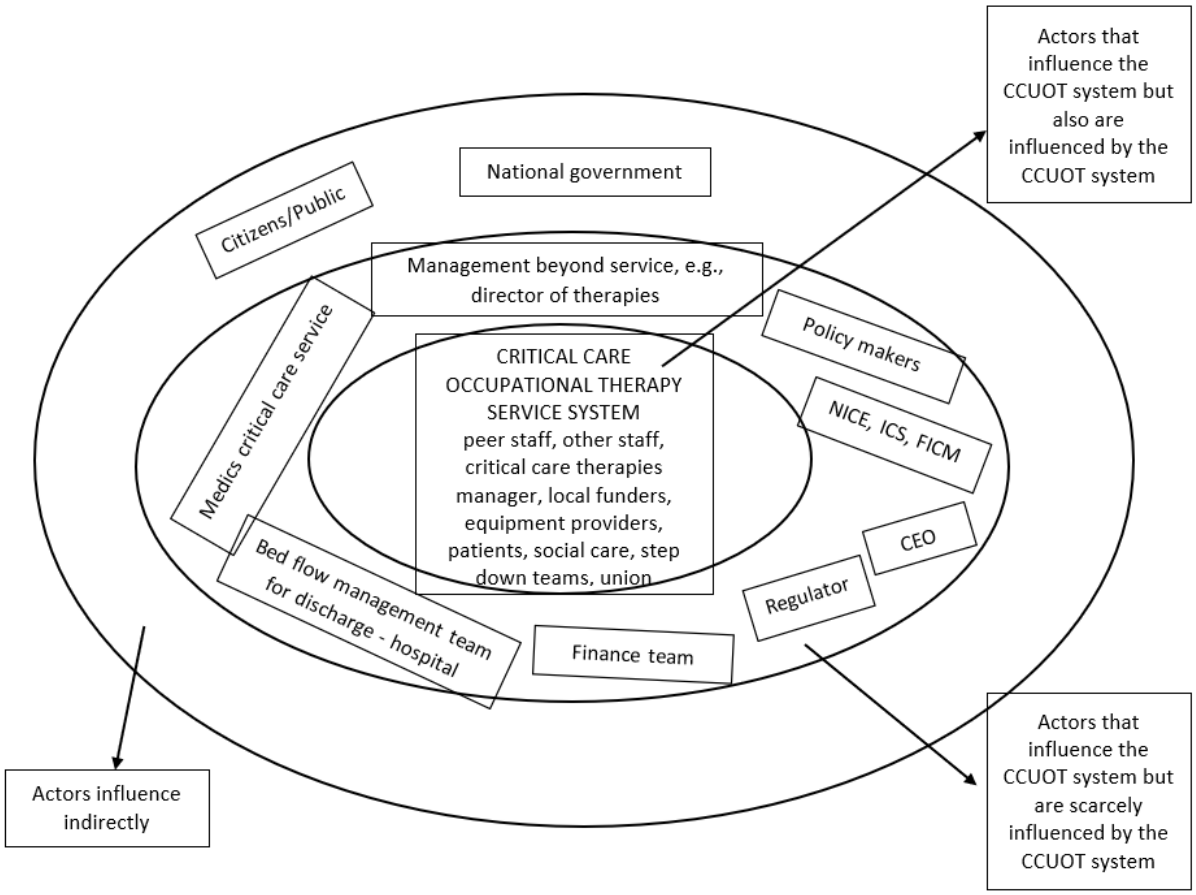


Figure 5.9. A conceptualisation of systems boundary/ies of critical care occupational therapy

5.2.3. Interpretation of themes as forming feedback loops

The themes identified from staff evaluations during and after the research implementation timeframe, form feedback loops that impact the effectiveness of the CCU OT services delivery. These are also spaces in the system where an intervention could potentially change the behaviour of the system, the CCU OT service to improve service effectiveness, identified as leverage points (Meadows 2009). Meadows (2009) classifies 12 different types of leverage points, points where action for change could take place, and are in order of strength of influence to act on the system to create change. She adds a caveat that her list is not an exhaustive one and should evolve as more is learned about systems levers. However, for this CCU OT staff access to system levers can be considered to be added to the typology of struggles to deliver effective services.

Meadows (2009) starts backwards with the 12th being the least impactful which she names 'numbers', tinkering with details such as stock, parameters or subsidies. Forrester (1968) in his seminal book, 'Principles of Systems' states that leverage points are counterintuitive. An example of counterintuitive regarding the 'numbers' lever, we have heard from the news that there are increasing shortages of beds in the NHS (BMA 2022), they like to keep bed occupancy at 85% at its upper safe limit (NHS Providers 2017). Intuitively the government's new Autumn budget has thrown more money into the NHS and delayed putting money towards social care by 2 years (Gov.UK 2022a), which is dealing with the symptom instead of the system's root problems. Counterintuitively, it would impact the system better, if the budget focussed money to 'fix' the social care system problems (Gov.UK 2022b), such as improving the number of respite and care home beds available, improving number of carers and their pay, supply of more preventative care services, and more, as this will short and long term slow the flow of admissions demands and need for NHS beds. The 2nd leverage point, 2nd to most impactful, she terms as 'paradigm', the 'mindset' out of which the system is developed, change of the system comes from persistent speaking out where the system does not work and where and how to enact change (Meadows 2009). Then work with those in power to resource and embed change. The 1st leverage point is 'transcending paradigms', the most impactful leverage point, she suggests if current paradigms do not work choose one that best fits to lever change (Meadows 2009). Her leverage list from 8 downwards are less about physical parts of the system (e.g., stock/inventory) and more about information and control parts of the system as points to lever change (Meadows 2009).

The point at which levers could act on the system from the data of this study can be developed by building an overall map of the feedback loops within the system showing relationships between each of the separate flow maps. Pulling together the information from the themes in table 5.1. and figures 5.3 through to 5.8, allows to map the impact on the flow of critical care patients coming in to CCU and being discharged from CCU. This will then clarify the point at which levers could act on the system from the data of this study.

Referring to table 5.1., the first problem identified is the staff shortage, but to fill that gap there will be delays due to the recruitment process, so the system is unbalanced (positive reinforcing feedback loop as it reinforces the vicious cycle perpetuating negative performance/outcomes of the service) (figure 5.10). Staff shortages will impact service effectiveness for CCU OT, as it has been demonstrated that shortage of staff has potentially led to a high number of missed treatment sessions for staff. Long term staff shortages lead to stress/impact wellbeing, low morale, and job dissatisfaction for staff, which in turn affects staff retention (Bhagat and Arora 2021, Knight et al. 2013), (during this study two staff left the CCU OT service), this can be represented as another feedback loop (figure 5.11.).

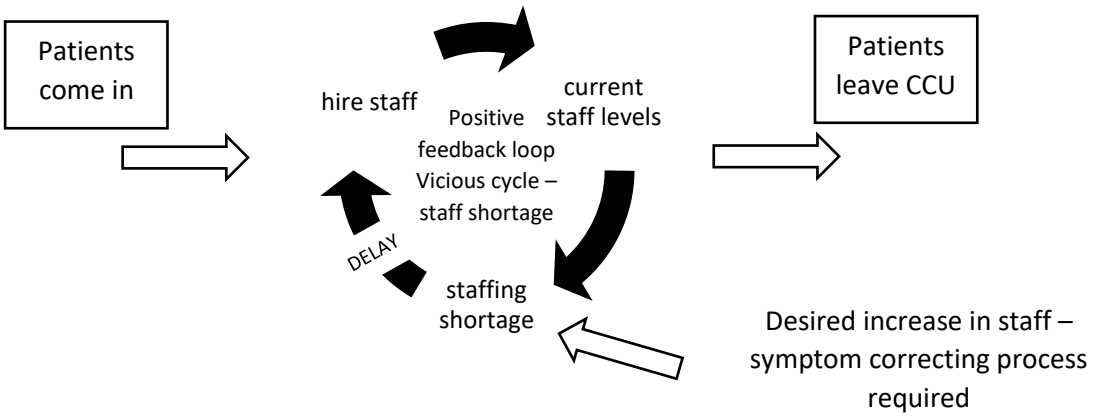


Figure 5.10. Staff shortage loop causing imbalance in the system

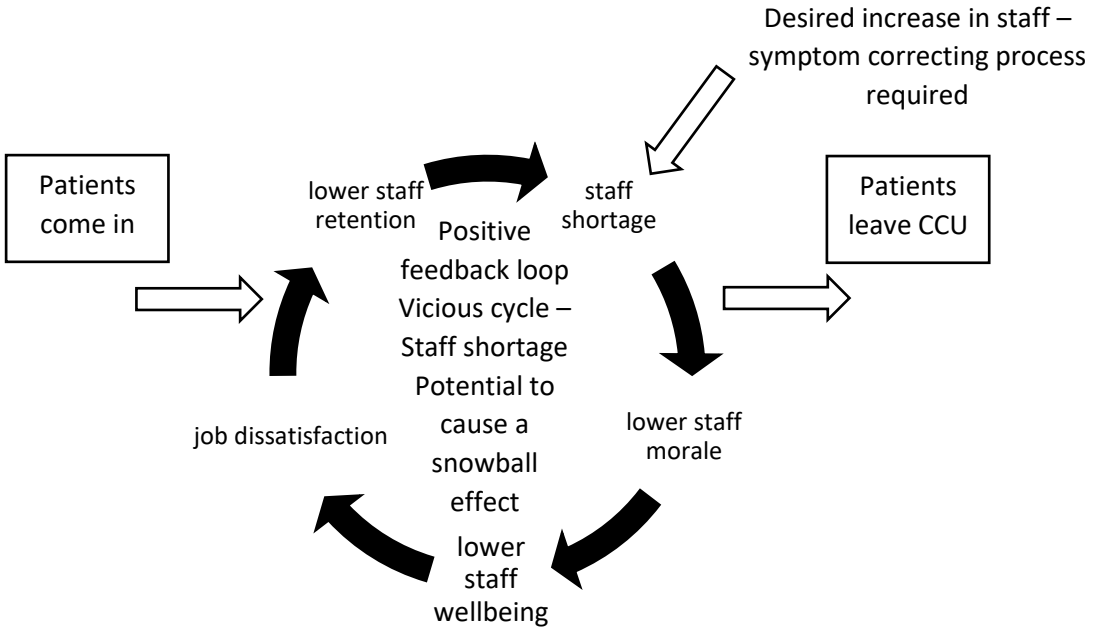


Figure 5.11. Staff shortage loop causing another imbalance loop in the system

The job description was identified as another problem, as it was not ringfencing the CCU OT staff for critical care work primarily. The job descriptions themselves do not impact the system performance directly, but could do so indirectly, e.g., by contributing to job dissatisfaction or lower staff morale, and potentially lower staff retention.

The funding arrangement for the CCU OT service does impact how much money there is to hire staff and whether this helps to ring fence staff for critical care. This will have a contributing factor on patient discharge and effectiveness of the service. Hence the current CCU OT servicing funding arrangement is also unbalancing the system (figure 5.12.).

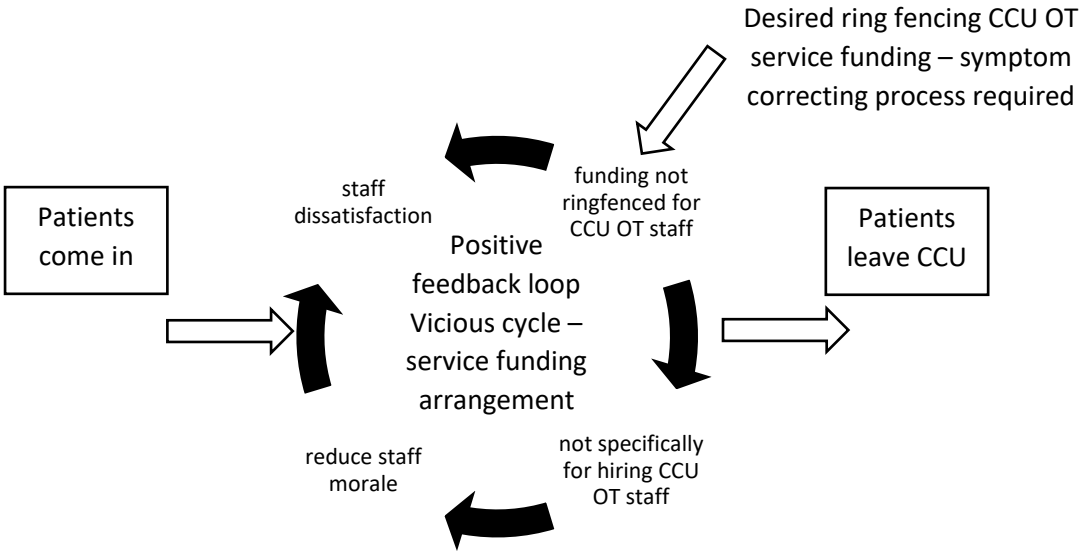


Figure 5.12. Staff/service funding feedback loop causing imbalance in the system

As CCU OT staff are removed from their work to assist with bed flow management for the wider system, this does affect service effectiveness, hence unbalance the system, as it has resulted in a lot of missed treatment sessions for patients (see figure 5.13.).

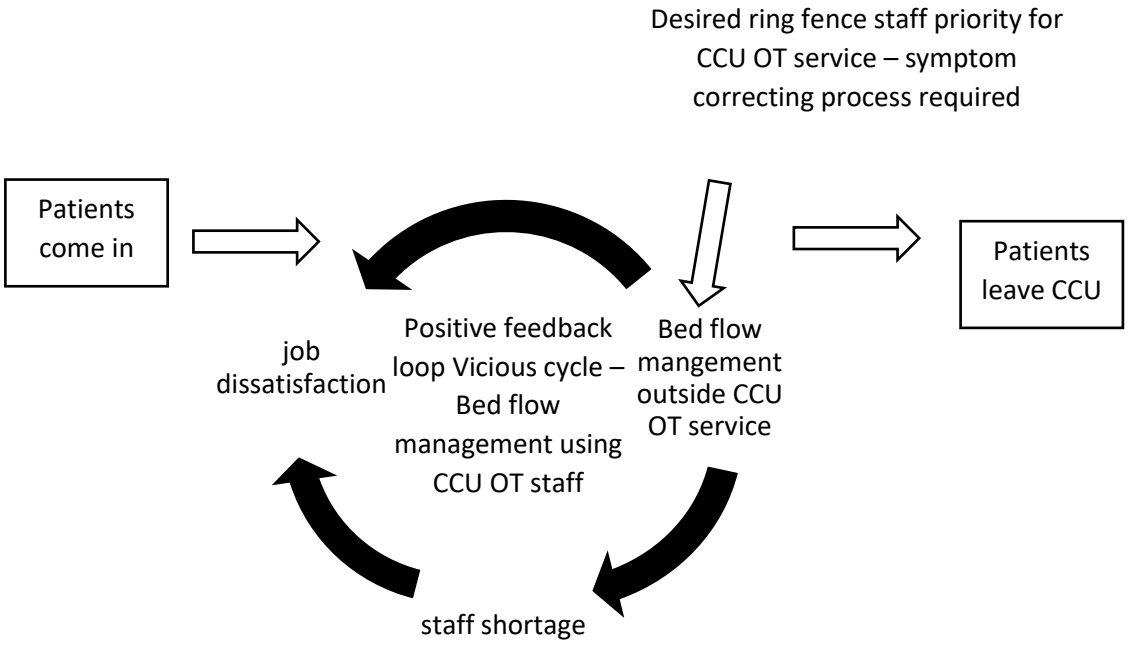


Figure 5.13. CCU staff being pulled away to manage wider organisation bed flow management feedback loop causing imbalance in the system

If staff raise issues and they are not heard and acted upon then this can have an unbalancing effect on the system. However, if staff continue to raise issues, to disrupt the status quo until they are heard, this can have a balancing effect on the system. This would set up a negative feedback loop because it opposes or changes the current unwanted direction of the system (Meadows 2009), potentially improving job satisfaction and morale and improving service effectiveness, itself a lever to change the system (figure 5.14.). Seddon (2005) states this is about showing and not proving that there is a different way for the system to be and behave to be effective.

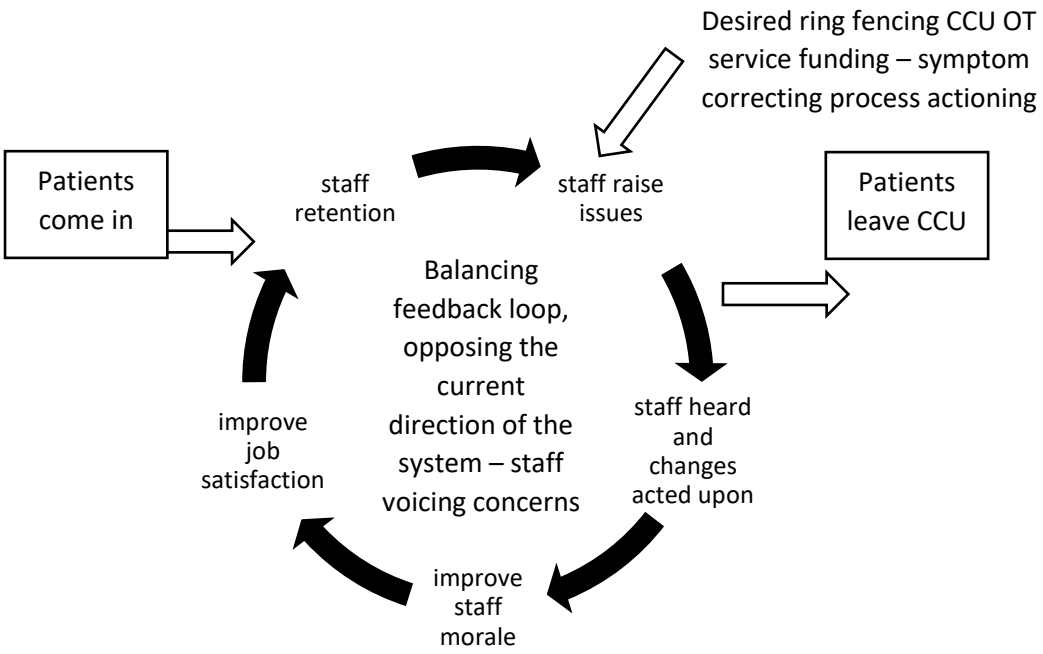


Figure 5.14. CCU OT staff raising staff issues can have a balancing impact on the system

However, if staff are not listened to longer term this can lead to a positive reinforcing feedback cycle and affect service effectiveness negatively (see figure 5.15.).

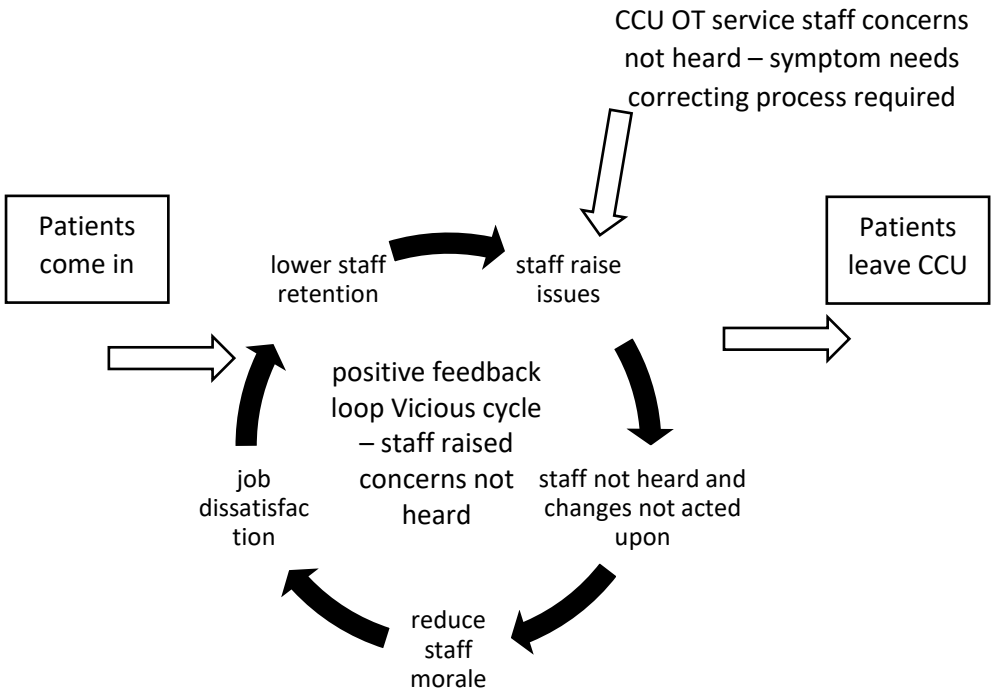


Figure 5.15. CCU OT staff raising staff issues and no change occurring can impact on the system

Bringing all the feedback loops together (figure 5.16.) it is possible to link the feedback loops through points of commonality. The positive loops are reinforcing negative unwanted outcomes that, without the balancing loop, would send the system into failure or crisis. Balancing loops are fundamental for the welfare of the system (Senge 2006).

On interpreting the themes with Meadows' (2009) system levers list, 'shortage of staff' could be maintained through a positive feedback loop, reinforcing negative outcomes, the shortage of staff leads to more staff leaving and therefore a worse shortage of staff. To counteract this, you need at least a balancing feedback loop. Balancing feedback loops always have goals that meet the systems purpose. The balancing loop's goal in this context is to magnify the voices of the CCU OT staff when they are reporting how they are experiencing the system. This will act as a lever of change to contribute to the continued safe discharge of patients from critical care (overall purpose of the system). Early on the staff identified that for change to

occur they needed more staff as this is their intuitive idea for a lever to change the system. The balancing loop is the counterintuitive leveraging point that will have more impact.

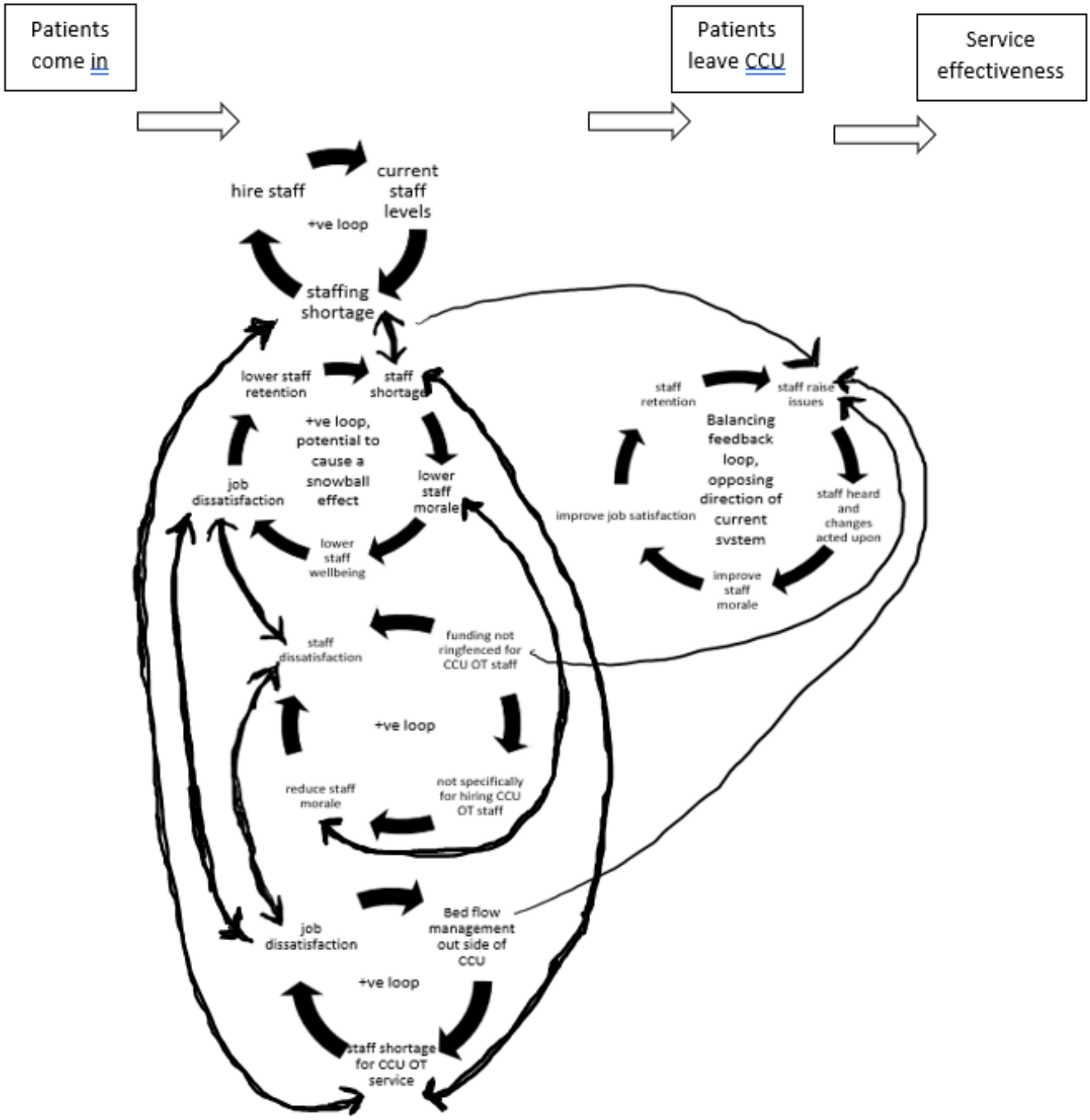


Figure 5.16. The relationship of the balancing feedback loop to the unbalancing feedback loops

In systems thinking figure 5.16. is referred to as a 'messy' picture of the complexity of systems (CCU OT service process affecting patient flow) (Checkland and Scholes 1990, Stowell 2009). This messy picture was developed by viewing the vicious cycles and the balancing loop as a picture on an iPad, and then free hand drawing the connecting arrows between the cycles and loop. Messy pictures help people make sense of the whole system and understand where the leverage points are to improve the behaviour of the system.

5.2.3.1. Systems implications for CCU OT service and practice

Through the SVM process the staff were making sense of the occupational therapy service by trying to deeply interrogate the behaviour of the CCU OT service (system). The factors impacting on the service were that the CCU OT staff were not ringfenced solely for the critical care service. This was due to a policy/rule that is in place organisationally for the CCU OT service to support the wider organisational purpose of discharging patients and keeping the bed stock available to keep the flow of patients out of the hospital. This is because the CCU OT service is nested within the critical care service, which itself is nested within the hospital system that is nested within the political system. Each of these systems communicate with each other either directly or more peripherally and impose on the system behaviour and output of the CCU OT service. From the systems analysis, the staff information about how the occupational therapy service is working is interpreted as a balancing loop (figure 5.15.) to disrupt the current vicious cycles of the CCU OT service system impacting service effectiveness for the CCU OT staff.

Taichi Ohno's (1988) work on creating success in the Toyota production system was from sense making of the system from the information of the experiences of the system from the shop floor. This enabled Ohno to understand the limitations, failures, and anomalies of the system due to their current paradigm, to then decide on identifying a new paradigm for the system (2nd and 1st levers of change (Meadows 2009)). Ohno (1988 p:19) identifies the efficiency of a system as:

"Present capacity = work + waste"

Seddon translated Ohno's factory work context into the service industry, people services, and identifies waste as failure demand, failing to do what should be done,

and this is improved by improving service effectiveness from which efficiency will follow (Seddon 2005). For the CCU OT service this is the missed treatment sessions and the contribution of management and organisational thinking impacting this, and in human services you cannot stop waste coming into the system, but you can keep it low to reduce its influence by meeting the patient demands on the system (Seddon 2005).

From this study the lever for change for the CCU OT service is the balancing loop of the staff to keep informing management of the issues through data and facts, on how the patient flow is impacted in CCU due to failure demand. This will contribute to disrupting the current paradigm driving the organisational thinking behind the current performance of the CCU OT service system. For example, one of the remits of the occupational therapists in CCU is to treat delirium from a nonpharmacological position (Firshman et al. 2020), if this is delayed due to missing of sessions, then this can increase length of stay on the ward (Schubert et al. 2018, Salluh et al. 2015).

The CCU OT service can apply some of Ohno's (1988) production line advice (not to do with autonomation) to impact the system through information and control parts:

-Bringing back common sense into the system

Regularly carry out 'health checks' on the system to identify waste, to then identify actions to counteract the waste to reduce it entering the system. The staff mentioned how the research process had given them time to think about their service, this has to become business as usual in practice. To rethink and reframe will be met with resistance but CCU OT staff need to be persistent in showing, not proving, the facts (Seddon 2005, O'Sullivan et al. 2021). The CCU OT staff in one aspect were doing this as they were collecting data of missed sessions and number of patients each staff member was carrying on their caseload, and reporting this back to the manager. However, the timeout, i.e., the space, to take a deeper evaluation of the service and understand the service performance and their capability and capacity to deliver the service, was limited and inconsistent. One CCU staff, Ms Blue, mentioned that they want to explore the service development, but they did not feel supported by the organisation; *"I'd like to do or develop services…. It's culture It's a culture of not"* [referring to the organisation].

Giving staff time and space to be supported to carryout evaluations and reviews not only enhances their capability to innovate, but also improves their capacity to challenge organisational structures using the data that they deemed as relevant to showcasing them, which in turn helps with staff retention (Walker and Dobbing 2021). It is unclear what the manager did with the missed sessions data information, although there was one job vacancy in CCU OT at the beginning of the research implementation stage with CCU OT staff, that had not been recruited to nor filled with agency occupational therapy staff, as mentioned by Ms Blue; *"There is a Band 7 post OT post which is essentially Mrs Purple's post but with a bit of extra money that went out, but we didn't get any applicants".*

-Patient flow is fundamental

The CCU OT staff have to make explicit how their contribution is necessary for maintaining flow in the service in CCU, they must collect the data that are showing this which are missing from the current CCU OT service data set. Hence, applying outcome measures is a way to grow and show this, which the CCU OT staff were considering during this research process. They decided to apply the goal attainment scale (GAS) as an outcome measure to showcase occupational therapy and present this data alongside the length of stay in critical care data see (the new paperwork on page 158). The CCU OT team adopting the GAS as an outcome measure is exampled by the quote from a CCU OT staff member, Ms Blue; *"Been talking about the GAS goals we are pretty much sorted with that we haven't started using it yet. Yes, we've got all sort of sorted. All the paper work's done"*. Using this outcome measure will grow descriptive data to then enable comparative analysis of the data sets. It is unclear why the CCU OT staff had not already identified and started using a measure that represents occupational therapy outcomes to inform patient flow.

Being strategic about how the CCU OT staff are going to support patient flow will also raise the necessity of occupational therapy in CCU. But one of the CCU OT staff mentioned their frustration that there isn't a strategic long view plan, Ms Blue; *"It's almost like do we cope today yes. You know NHS big organisation. Do we cope today yes. There's no like thinking about, there's no strategic, in my mind there's no strategic*

thinking of how we're going to develop things. It's just coping day by day which drives me nuts".

Ohno (1988) expresses that to have an effective service the capacity and training of staff must be built up so that when there is a change in the system the staff are able to adjust and address the changing demand. Seddon (2005) refers to this as the system as able to work with the variability in demand because it is set up 'right' from the beginning, designed to meet the variation in demands coming in from patients. The staff informed the researcher that there are over 3 critical care wards and there are 40 beds; the guidance from The Faculty of Intensive Care Medicine and Intensive Care Society (2022) suggests 0.23 WTE per critical care bed, which equals 9 WTE occupational therapists. Currently the CCU OT staff are 2.25 WTE. Hence the capacity of CCU OT staff is very low, and they will continuously be playing catch up with their critical care patients if the priority is moving patients out of hospital in the wider organisation and taking CCU OT staff away from critical care in order to accomplish this priority.

-Make relationships with people with power in the organisation to make changes in the system

Being staff in healthcare is being political because the NHS system is driven by the political system to direct each NHS trust. Labelling the staff as 'political' may be a way of stigmatising the act of raising issues with the organisation, thereby stopping staff from engaging in such behaviours (Lees 2016). However, Ohno (1988) states that people in power should use their authority to enable change, and show commitment to change, and through this enable people to access the potential change levers. The CCU OT service lead understood this and identified that they were meeting with the nursing directorate and medical directorate to further the relationship and gain support for changes to enhance CCU OT, as evidenced by the Ms Blue's comment; *"I've got a meeting with the medical director of critical care and nursing directorate coming up as well* [so]*that I can push for, to think about* [critical care] *occupational therapy services across sites".*

Relationship building between frontline staff and executives in the NHS is born out of leadership approaches that wish for an organisational culture of transparency, to

support staff to raise concerns and suggestions for change (Elton 2016). In turn this way of relationship building leads to improved patient satisfaction and staff retention (Elton 2016). In SVM, this is referred to as pulling in the expert when they are required in the process to enable the service to deliver value demand, providing what the patients want from the service which is delivered by meeting the needs of the frontline staff (Seddon 2005). In this context, the CCU OT staff need management and above to be their allies, to resource, support and enable them to be occupational therapists and to deliver occupational therapy in critical care.

5.2.4. CCU OT staff engagement in service improvement as facilitating improving their professional identity

The SVM scoping literature review findings from chapter 2, raised that service improvement at the service level is not just for the service users/patients but it is also for the benefit of the frontline staff, CCU OT staff in this case. Hence chapter 2 redefined people centred services as services designed by and for the people that interface service delivery, that is frontline staff and service users.

The CCU OT staff focused on changes at service level that were also concerning them reconnecting with, re-establishing, being occupational therapists, and showcasing the meaning/purpose of occupational therapy, that is their professional identity. The concept of professional identity cannot be neatly described, it is formed from a concoction of a variety of topics, i.e., values, beliefs, knowledge, skills, group identity, individual identity, socialisation, behaviours and context of where the work is happening and chronology (Fitzgerald 2020). Professional identity has been categorised as collective, denoted *by "the attitudes, values, knowledge, beliefs, and skills shared with others within a professional group"*, and individual, described as "*alignment of personal attitudes, values, knowledge, beliefs, and skills integrated formed on a singular basis relative to collective professional identity*" (Hayes and Graham 2022, p. 23). This lines up with the theories of identity being individual and group in context, and that the group/collective identity becomes stronger when there is competition with other groups, or because of survival or due to feelings of belonging (Spears 2011, Hogg and Abrams 2003). The occupational therapy identity debate has been going on for more than 100 years (Turner and Knight 2015), and as

a professional group they have a weaker collective identity (Grant 2013, Mackey 2007) due to lack of collective understanding of history, roles and beliefs, variation of meanings in specialities, feeling not part of the in-group in multidisciplinary teams and lack of understanding of profession contextualised to countries (Grant 2013). Another way to think on this for the CCU OT staff, is that the medical model is the oppressive hegemon pushing the occupational therapists to be constantly on the backfoot playing catch up to assert themselves distinctively, and have sustainable presence, which has led to the CCU OT staff sharing feelings of being under-valued. These feelings are echoed in the allied health professions, the word allied giving others, e.g. nurses and doctors thoughts of having higher status (Nancarrow and Borthwick 2021). Developing professional identity can be added to the list of typology for the struggles that this CCU OT staff have in delivering an effective service. The changes identified by the CCU OT staff were:

5.2.4.1. Saying occupational therapy and not referring to the abbreviated version 'OT'

The patients interviewed for the pre and post research implementation timeframe were unable to name, nor identify, occupational therapy as part of their treatment pathway in critical care and abbreviating occupational therapy could be a contributing factor for this. Hence the CCU OT staff wanted to do this, say 'occupational therapy' and not 'OT', so that in spaces where they are interacting with patients and other professional colleagues their professional name would be heard. This was captured using the count of the number of times CCU OT staff stated occupational therapy within the evaluation meeting transcripts, before, during and after the research implementation timeframe. There was a statistically significant difference between the mean counts of saying 'occupational therapy' between the transcripts of the last evaluation with the CCU OT staff and with each of the transcripts before (collectively) and during the research implementation process. In comparison the mean was the greatest in the end of research evaluation meeting transcript and lowest in the 'during research' transcript.

In an article for Guardian online Julia Scott (2017), the previous chief executive of RCOT, called to action to not abbreviate occupational therapists and the profession's

name to two letters 'OT', so that the public hear the name in full and start to recognise it. The power of the public to promote the profession and provide necessity and legitimacy of the work cannot be understated (Abbott 1988). The introduction of the Friends and Family Test as an outcome measure in 2013 (Department of Health 2012) indicates the power the public have in supporting, or not, a service's resourcing and development, let alone existence. One of the CCU OT staff, Ms Blue, identified in the 2nd evaluation meeting 'pre research' implementation, that another contributing factor to them not being known as a profession could be due to other, dominating professions; *"I was just going to say I wonder like some of that is because there's only so few occupational therapists in critical care and so many in physios. In some ways it's very difficult to be different because you're trying to fit in with the therapy team …. But you're one voice out of 30 physios"***.**

Organisations push for, emphasise the importance of, and hire some professions over others, a suggested reason for this behaviour is *"corporate capitalism"*, this is when the business administration side of the NHS reduces the work to capital gain based on pseudo-science leading to profit/savings before patients (Abbott 1988 p.148). Hence, in critical care, the emphasis is on physios, nurses, and medics as they have a medically established history, some longer than others and this gives them power and presence supported structurally (Abbott 1988). A recent article in Guardian online identifies the need for occupational therapy as a contributing factor to improve delays in discharge, and not just social care, as they are well placed to improve wellbeing and disrupt deconditioning and deskilling that can happen when in hospital, and these may then result in delaying discharge in England (Lee 2022). The article goes on to identify leadership and NHS boards as problematic in not valuing occupational therapists. To counteract this, a possible way forward is for workplaces and the professional body to have a strategy and pathway to 'up skill' occupational therapists to be part of the strategic planning and decision-making teams. This will place occupational therapists in positions where they can shape the workforce using their unique professional perspectives to contribute to meeting the patients' demands, that is, centre the value demand into the system to improve service effectiveness (Seddon 2005).

It is not just money that will improve the performance of the NHS patient flow, the system should focus on how the work is organised, what are the unnecessary bureaucratic pressures, who is doing the work and how it is resourced. The SVM cycle and reiterations through the cycle enable these to be explored and actions taken to improve the system (Seddon 2005, Zokaei et al 2011). Leadership is fundamental to quality care and effective systems behaviour, yet in professional education it is an add on instead of a foundation skill (Kline 2019). The Allied Health Professions department in NHS England has a leadership strategy (Health Education England 2022) , RCOT (Orman 2018) has a leadership pillar with its continuing professional development framework, however the government focus on leadership in the NHS is on medics (Faculty of medical leadership and management 2018) or medics and nurses (NHS England and Health Education England 2018), the latter two taking a narrow view on which group is seen as better placed for leadership from the workforce. Again, this is about jurisdiction of the professions, those that hold the power skew representation in influencing positions (Abbott 1988). However, there are some, if limited in number, occupational therapists in power positions, for example:
Suzanne Rastrick Chief Allied Health Officer NHS England
Maggie Ellis (FCOT) Member of the Cross Party Groups for Digital Inclusion and Disability, Holyrood and for Smart Cities and Legal Aid in the UK Parliament.
Melanie Burrough Director of Therapies The Children's Trust
Nathalie Zacharis Director of Therapies SLAM Trust.
This brings in another dimension to discuss, but not part of remit of this thesis, that those represented here are white women.

Hence the discussion indicates the usefulness of articulating occupational therapy/ists in its full form, so that it is heard as a profession working in critical care, to provide legitimacy of the profession to patients and promote the jurisdiction of the profession to be in the workspace of critical care.

5.2.4.2. Purpose of CCU OT service

During the first evaluation meeting with CCU OT staff when the researcher asked what the purpose of the CCU OT service was, the responses framed the answer in

generic terms and more about impairments. Quotes from two CCU OT staff example this: Ms Purple; *"I think it is to assess change in the patients function and identifies impairments that need intervention, that may improve the patient's function"*;
And Ms Blue; *"That could also apply to physical impairment or like an anxiety or delirium".* From their responses it was not clear what was uniquely occupational therapy in the work in critical care, e.g., applying activities as modes of treatment, they were struggling to explain what they do as occupational therapists, specific to occupational therapy. In the second evaluation meeting the discussions around this continued and two CCU OT staff members stated how they felt about the discussion: Ms Purple; *"It's blowing my mind"*, in that Ms Purple was struggling to explain occupational therapy; Ms Blue tried to offer an explanation as to why there was this difficulty*, "We are not good at expressing it".*

To find status or belonging the CCU OT staff may be using language that is familiar to the dominating professional group. In this way critical care professionals in the multidisciplinary team, by not asking profession specific information from CCU OT staff, are indirectly encouraging the occupational therapists to continue using impairment/medical language (Cooper 2012). In this way the dominant professions can maintain their dominance (Abbott 1988). Wan Yunus et al. (2022) from their research on 'Allied health professions perception of occupations therapy' identify the need for occupational therapists to improve their visibility. They advise that this should be done in one aspect by having an occupational therapy purpose that connects with and is understood by patients and the multidisciplinary team, which will improve the perceived role confusion of occupational therapy by others. In the 2nd pre research implementation evaluation of CCU OT service, the staff still appeared to find it difficult to specifically describe what occupational therapists do, being broad and generic in their comments. Two comments exampling this broadness and vagueness are from; Ms Blue, *"I think there is something about every OT expressing what they do to other people that is so inherently difficult, and I don't know why. I think it is that the profession, that it's just, it's so different no one understands what they do, I think even OTs sometimes struggle"*; and Ms Green, *"I feel like at the core OT's the same but it's the different settings and how we utilise that is what is different and hard to express".*

Some studies found that occupational therapists were unable to describe what they do, how they did their work and how they avoided using terms specifically about occupations as they felt people wouldn't understand (e.g., Clouston and Whitcombe 2008, Wilding and Whiteford 2008, Kinn and Aaas 2009). There is a threat for the CCU OT staff, if the occupational therapy profession continues to be unable to describe itself and demonstrate its difference to showcase its unique knowledgebase, it will be downgraded in its legitimacy to be in the workplace, this especially from the public perspectives (Abbott 1988). Moreover, the dominating professions, e.g., physiotherapists, nurses, and medics, could overtake the CCU OT staff responsibilities further making its relevancy, necessity, and visibility less, and moreover providing justification for the organisation in using the CCU OT staff for the hospital discharges outside critical care work.

However, in the 2nd meeting near the end CCU OT staff started to develop an understanding of why they did not frame their communications about the work in terms of occupational therapy and started developing thoughts of a new purpose as these quotes from CCU OT staff indicate:

Ms Red

"I don't know if they [multidisciplinary team in critical care] *would like it if we didn't talk in a medical way. Certainly, on my side anyway where I work whether they would, how they would find that as a valued input or not. Do you see what I mean?".*

Ms Blue

"I think we've got psychological therapists now on the units I work on, and they don't talk medically, and their values are maintained within, you know they're well respected".

Ms Purple

"Maybe actually it's the thing that people are looking for" [occupational therapy specific information about patient improvement].

There is an indication that once the occupational therapists started documenting and articulating their work using occupational therapy language their professional identity strengthened (Wilding and Whiteford 2008). This enhances the belief that occupational therapists hold that they bring a unique contribution in a multidisciplinary team (Wan Yunus et al 2022, Kinn and Aaas 2009).

The final revised purpose of the CCU OT service was based on what patients demanded of their service and relevant to occupational therapy as opposed to being generic (see page 136 & 138 new patient facing purpose). Ms Blue in the final evaluation meeting reminisced how the patients' feedback from the focus group influenced their decision to review the purpose of the service; *"Kind of cos that information hearing it from the patient was quite powerful, isn't it? I think so. I think that has stuck with me like the aims and the purposes, and also the terminology actually expressing occupational therapy in a different way. I think that's been really powerful for me seeing the patient more as a whole trying not to break them down as much".* This is another act of clarifying their difference as a profession within the critical care multidisciplinary team, and making explicit their jurisdiction, that is the link between the occupational therapy profession, knowledge, evidence and the work they do in critical care legitimising their place in the workspace.

From the last evaluation meeting a quote, from a CCU OT staff member, Ms Red, sums up how they were feeling going through the research process, while developing towards a patient facing purpose; *"I just think to have that strength that we've talked about in terms of the language that we use. And the way we see and view the patient and the way that we interact with them. And having the confidence in yourself not to feel like that you are not going to sound stupid if you talk about the patient in terms of their occupation, and actually what they're doing, other than talking about them from an impairment focus level. Actually talking about the fact that yes actually they've been able to feed themselves or they brushed their teeth".* In this same meeting Ms Blue further adds how they were confronting some truths while going through the research process; *"I suppose you are confronted with things that you had probably known that you should've been doing …. But because you're kind of in the system that is very medicalised you see that*

as the right way to, and actually this process has kind of, being able to have timeout and discuss the service and where we're going with it, and actually having that change of perspective. Like the positive criticism in a way is challenging our thinking has been really helpful. Kind of actual, as Ms Green said we don't need to be completely medicalised, that it is about the patient's occupation it's about what the patient wants". Their belief in their unique contribution is coming through in these comments, that they do not have to be dominated by the professions with an established history in medicine, and the need to have space to review and develop. The last line brings home that the CCU OT therapists' purpose is regarding meeting value demand, that is to design a service around this to improve effectiveness.

At the last evaluation meeting the CCU OT staff also reflected on the research participation experience overall, as exampled from a couple of comments from the CCU OT staff:

Ms Green

"I think pros wise even us having to really analyse why you do your own practice, why we do things and really making sure we feel focussed on the occupational therapy part of being, of being an occupational therapist, it's been the most interesting and useful part it's made us be quite self-reflective, and I found all of that really useful".

Ms Blue

"Actually, liked reflecting on the service that we have built and kind of looking at why we are doing what we are doing. Who we are doing it for and what they actually want".

Ms Blue

"And I think now our ability to explain it".

From these comments there is indication of a growing sense for the CCU OT staff's collective understanding of their professional identity and their core business as part of the critical care service, and that this has happened because of them engaging in service improvement through applying the SVM process. In a sense they are becoming change agents for the system, they are teetering on the edges of this,

some further along than others in this. Being change agents is not really represented in the RCOT (2019b) learning and development standards in occupational therapy. In the Canadian Association of Occupational Therapists (2012), 'Profile of Practice' document it names being a change agent as a requirement for enabling occupational therapy practice. Finlayson (2013) suggests in general there is not much presence of this term, 'change agent', in occupational therapy literature. This could relate back to the discussion of leadership, nurturing and cultivating occupational therapy leaders at every level, so the occupational therapists feel able to be, and be visible and have status within the multidisciplinary team in critical care.

5.2.4.3. Outcome measure

A CCU OT staff in the last meeting did return to review the push of the dominating professional groups to focus on the impairment and medical outcome measures. This comment is a summary of the discussions around the topic, Ms Red; *"Yeah, I think working in critical care and especially when you're learning to work in critical care like I have been, when you are working round how other professionals and doctors and physios the way they work. It is all like you said impairment focussed, and it's all very scientific it's all very precise about things. You know measurements, you know their bodily functionings and everything".*

The CCU OT staff had said to the researcher that they inform the 'package' of outcome measures that the multidisciplinary team collect, which includes anxiety/depression measures and delirium scale. The latter two are also carried out by nurses. Also, the CCU OT staff assess range of movement at joints which are also carried out by physiotherapists. So, there wasn't anything showcasing outcomes from occupational therapy intervention, this was expressed by CCU OT staff, a couple of examples of this from the 1st pre research implementation service evaluation meeting:

Ms Purple

"At the moment we don't use a formal outcome measure for OT. It's more just it might be that we use a standardised assessment to show a change in a particular aspect of the patient such as cognition or mood".

Ms Blue

"So, I think what we do is goal setting as our main outcome measure. It's just finding something scorable".

In relation to the international classification of functioning, disability and health framework (World Health Organisation (WHO) 2002), outcome measures are a snapshot over time of the complex relationship between the person, their diagnosis, their abilities, level of participation in activities/CCU OT interventions and the environmental factors (Laver Fawcett 2014). Outcome measures are part of the evidence that a service grows in practice, which enables occupational therapy services to show activity outcomes for the patient. Then this data potentially could be compared to discharge data. However, the missed sessions, which is what the CCU OT staff had raised as a concern early on, could also be a measure that could be analysed with discharges, especially delays from the critical care service, and potentially show patterns. The evidence from the occupational therapy specific outcome measure/s will inform the jurisdiction for the CCU OT in critical care services, and informing on the effectiveness and quality of care for the patients from the service. In the 4th pre research implementation meeting, which was the meeting for CCU OT staff to plan for the changes to improve the service, Ms Blue commented on the feedback from patients on what the patients wanted; *"We were talking about the patient focus groups and the patients, the previous patients, kind of what they say what they put their value on, which is sort of doing the personal care task for example".*

In earlier evaluation meetings there was mention of the goal attainment scale (GAS) as an outcome measure, for example Ms Purple commented; *"I think more sort of FIM FAM, Barthel. They'll use those sort of functional type of measurements* [not referring to their critical care service]. *But I think generally they seem to* [unclear]. *There're other ones they use like GAS, the TOMS I think has been mentioned".* Identifying an outcome measure that will focus on activities that the patients identify for goal setting, indicates that the CCU OT staff are then engaging in improving their visibility with patients and the critical care multidisciplinary team. This will improve their connection

to the occupational therapy jurisdiction of their work in critical care and centre occupational therapy in their work.

5.2.4.4. Poster

In the 2nd evaluation meeting pre-research implementation, a CCU OT staff, Ms Purple raised the topic of an information board near a critical care ward and that it is dominated by medical language (see section 4.5.4. for old and new poster); *"It's funny cos we've got like a little board on the critical care unit where I work, and we've managed to persuade the ward manager to give us space, saying a little bit about occupational therapy, and I'm just thinking to it now. It's got very like medical kind of definitions of what we do and stuff…."*. The staff as discussed earlier were finding it difficult to explain what they did as occupational therapists at this point. The development of the poster is a sort of demonstration of their journey. They are able to showcase their occupational therapy jurisdiction and identity publicly by using the language of their profession.

The poster is linking up with 5.2.4.1. to 5.2.4.3, occupational therapy is stated, purpose is stated, and the outcome (not outcome measure)/exampled actions of the therapy are stated. The poster is a representation of their growth into their occupational therapy profession's skin. As the staff mature in this way of being they will most surely keep developing the content of the poster. At the last evaluation one of the CCU OT staff, Ms Green, summed up how the research process has reconnected them to their occupational therapy roots; *"Yeah, what I was saying was kind of remembering what occupational therapy is and what our profession is actually. I guess it is going back to the roots and actually yeah like almost rethinking back to why we do things, because it is really hard not get swept up with everything else then actually forget what our profession is and why we enjoy it".* The poster content reflects the content of this quote. By being involved in developing this poster the CCU OT staff are using another medium/platform to improve their connection to the professional language and their identity.

Being able to use the language of the profession in practice and being able to explain occupational therapy is about showcasing yourself as the profession and

firming up your professional identity. However, as the quotes have indicated throughout, this is overshadowed by the need for the CCU OT staff to gain recognition of legitimacy from the established medically driven professions (Abbott 1988). Walder et al.'s (2021) scoping review and, Turner and Knight's (2015) and Mason's (2006) research on occupational therapy professional identity, raise that historically and currently the profession is focussed on being the professional instead of being the profession, due to the need to gain legitimacy. The former is the practical and pragmatic processes and procedures to being a safe health and care professional delivering quality care/services; whereas the latter is concerning embracing the language and normalising its use in practice, an acculturation of the occupational therapy language and activities treatment modality in practice to therefore shore up professional identity.

5.3. Chapter 5 conclusion

In summary the SVM underpinning theory, systems thinking approach, intervention theory and double loop learning have all been supported by the findings. The feedback loops are part of systems thinking approach, and the findings demonstrate how the feedback loops are informing how the CCU OT service performs. The multiple points of data collections led to the multiple actions taken, this supports intervention theory's multiplicity of data to understand the how the system is working to then plan actions for change. By responding to Check phase 2, this elucidated that service improvement is not only about operational data and outcomes, but for this CCU OT team the findings identified that service improvement is akin to struggling for change, and hence the act of improving service is a microcosm of a social movement.

5.3.1. The service level outcomes impacted

The service level outcomes impacted from the SVM approach to service improvement, after the research implementation period January-June 2022 were:
-Missed treatment session increased from 57% to 61%, during the research implementation period.

-The redistribution of CCU OT caseload, saw the fulltime grade 7 increase their caseload, and grade 6 CCU OT staff had no CCU OT patients on her caseload. For the grade 6 this was due to attending to the discharges for the general hospital.
-Run charts showed that the service was more regularised in its pattern of delivery.
-Length of time from referral to 1st contact with patient statistically significantly reduced (the identified data were from the anonymous patient data provided by the lead of the CCU OT service).

5.3.2. The influencing improvement factors on service level outcomes

The influencing improvement factors on service level outcomes were themes identified from the CCU OT staff evaluation discussions, during and after the research implementation period (see figure 5.8 page 191):
-Staff levels in CCU OT service were not matching the guidance of 0.23 per critical care bed from 'The Faculty of Intensive Care Medicine and Intensive Care Society' (2022) critical guidance document.
-The job description did not ringfence the CCU OT staff for the critical care service.
-Funding arrangements did not specifically allocate monies for CCU OT service development.
-Bed flow management outside CCU OT service, as the CCU OT staff's job is not ringfenced they are frequently removed from their work on the CCU OT service, result in large amount of missed treatment sessions for their patients. Additionally, during the period of the research time frame the grade 6 CCU OT staff had no critical care patients on her caseload due to managing bed flow.
-Feeling unsupported and challenged, this was more related to supporting CCU OT to establish CCU OT service and with their continuing professional development (CPD).

5.3.3. Theorising struggle in CCU OT

Theorising struggle in CCU OT in the context of the research setting fits well with the single case study approach. As Yin (2018) states, a single case study is an exploration of a phenomenon (service improvement) in a case (CCU OT service), and that can lead to theory building to, e.g., challenge or confirm existing knowledge

(Yin 2018). This original research has identified a typology for the struggles for this CCU OT service's staff in delivering an effective service:

-*Staffing levels* – does not meet the guidance for the CCU OT staff

-*Job description* – does not ringfence them specifically for CCU service

-*Funding arrangements* – not specifically to develop CCU OT service

-*Bed flow management outside critical care* – legitimising taking CCU OT staff away from there critical care work.

-*Feeling empowered to make change* – This CCU OT staff do not feel supported in this area, especially regarding CPD.

-*Feedback loops* – CCU OT staff felt they were not being heard regarding what is happening for them on the shop floor, so they are not being empowered and resourced to engage with service improvement effectively.

-*Developing professional identity* – the CCU OT staff identified that they engaged in developing this during the study timeframe and it was challenging and changing how they viewed themselves within the multidisciplinary team. Focus on developing their professional identity has the potential to support them promoting their profession and voicing their needs for service change.

5.3.4. A continuous relationship for the CCU OT staff to be able to engage in service effectiveness

Overall, there seems to be a continuous relationship for the CCU OT staff to be able to engage in service effectiveness overall between three dynamically interacting factors:

- to look after staff and supporting them by resourcing their development;
- providing an environment for staff autonomy (power) to engage in change through the system levers, and;
- developing and checking in on professional identity as this influences staff behaviour.

These three factors relate to the reimagined definition of people centred services identified in the scoping literature review, in that staff have to be looked after too to be able to deliver quality services and to motivate them to engage in service

improvement. All this has potential for the CCU OT staff retention, staff retention is a problem in general for the NHS and supports organisations to think about how to enable opportunities for staff to be autonomously innovative and creative, see figure 5.17. as a summary representation of this discussion.

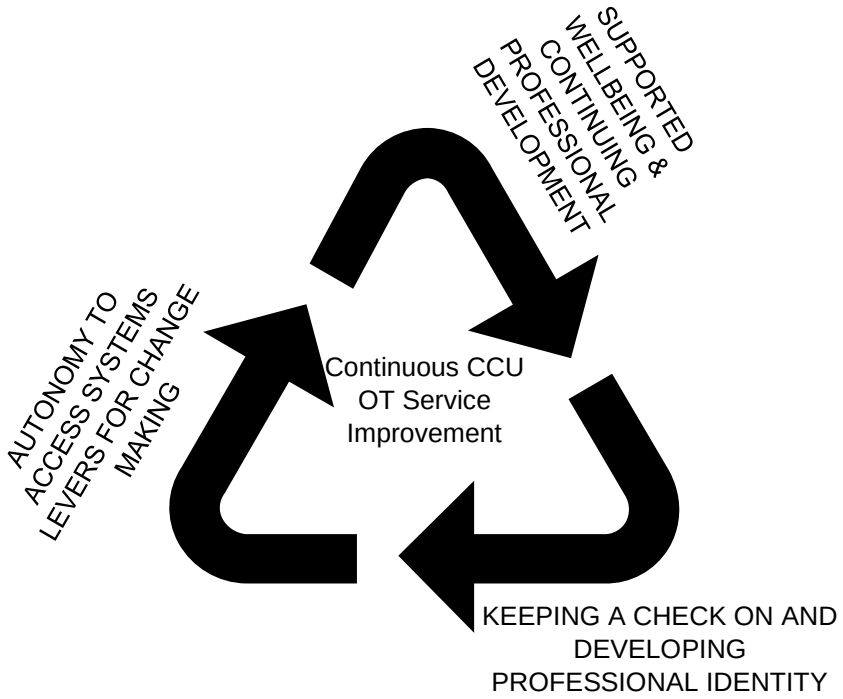


Figure 5.17. A graphic to represent the influential factors for continuous service improvement for CCU OT for this case

Chapter 6 Limitations of research

6.1. Introduction

No research is without its limitation, biases, and risks. Pollock (2020) calls researchers to pay attention to identifying and discussing limitations of research with intention, and not just an add on or passing chore. This chapter will discuss through critical reflections the limitations of the study and measures taken to reduce the impact of the limitations. The chapter will be separated into three areas: sample size, participant size, and single researcher bias.

The process of the research is clearly laid out in the thesis for transparency, credibility, and trustworthiness.

6.2. The sample

The sample in the case study methodology is the occupational therapy service, that is the CCU OT service, a sample of one. Hence, any findings are limited in transferability as it lies in the pragmatic realities of undertaking this research in the specific context of the CCU OT service, and subject to single researcher bias. However, as an initial exploration study of a topic, the case study approach provided investigation through mixed data collection methods to gain a fuller understanding of the topic through opportunity for multiple data points of exploration. Hence, the information would still add value to the existing evidence and support research in another occupational therapy service improvement research applying SVM, or if an occupational therapy service wanted to engage in service improvement. The whole process of this research is explicitly documented, e.g., protocols shared, to reduce the limitation of being a sample of one.

As there was one service studied, leading up to the COVID19 lock down and coming out of the lockdown, the demands on the service meant that the researcher had significant delays before the research could be implemented, reducing the length of research implementation time. Furthermore, SVM requires that the work of the staff is observed on several days, and this was not possible, as the covid strategies of the service restrictions did not permit the researcher to come on site. Hence, the

research could be missing a valuable set of data. Moreover, the ban on coming onsite led to any communications with staff and patients being carried out remotely on a virtual platform.

However, to remediate these barriers due to covid, the CCU occupational therapists could individually contact the PhD researcher and discuss their daily duties and concerns regularly. By doing this the PhD researcher could not only support the CCU OT staff but be able to gain some of the insight of the CCU OT staff's work through conversations. To enable effective zoom interactions and for building trust and safe space, the PhD researcher always gave time for participants for social conversation prior to research discussions, and time to decompress after, before leaving the zoom call (Archibald et al. 2019, Knoppers et al. 2021). On reflection, even as an exploratory research, it might have been better to have at least two sites for the research, multiple cases approach, as the COVID19 safety protocols may have been different on another site, which could widen the research setting from just CCU OT. However, you have to be mindful that multiple sites mean applying to each site's research and governance department, which could lengthen waiting time to start. Additionally, the researcher would have to be careful to attend to the different approval arrangements for each site. Moreover, as the timeframe was shortened to 6 months for the research implementation timeframe, only one iteration of the SVM cycle was possible for evaluation. To evaluate service improvement research in less than a year, is not enough time for the service system to start to adjust to the proposed changes (NHS Institute for Innovation and Improvement 2017). Hence a possible explanation why some of the quantitative data findings did not show change or statistical significance. However, the shorter time still showed insight into the stages of the process itself. Moreover, to reduce the impact of the issues raised, due regard and careful attention was paid to the trustworthiness and credibility of the research to maintain the rigour of the research throughout.

Regarding the statistical analysis, some of the one way ANOVA and Tukey Kramer analysis showed statistical significance, but in terms of statistics the power of the study is weak as the sample size is one, one service. However, this is not the focus for a single case study research, this logic cannot be placed as the research is not

assessing the prevalence (commonness) of a phenomenon but about plausibility (Yin 2018). So, for researchers it is prudent to be realistic regarding their statistical analysis meaning/s. On the other hand, selection of appropriate statistical tests is the mechanism by which to overcome some of the limitations of a single case study, and to identify potentially significant outcomes regarding service level outcomes and service improvement.

6.3. Participant populations interviewed

To understand the CCU OT service, the SVM framework guides that the voices of all stakeholders should be heard, especially the service users and the frontline staff before and after. This is carried out to gain a fuller understanding of the challenges for the service, to then put forward an effective plan to trial to meet the patients' demands, hence potentially improve the service under consideration. As such, a number of discrete participant population groups were identified as part of the service sample (n=1), namely CCU OT staff, a member of management, discharged patients. The number of participants in each of the participant population groups was limited but was deemed sufficient to ensure that the requirement for the voices of a width of stakeholders was to be represented. As this is an initial exploratory research the number of participants can be small.

As part of the ethics approval the researcher had to work with the lead occupational therapists to contact the patients to recruit them for the research. After two cycles of sending letters, and two sets of reminders for both before and after research implementation, 2 patients were recruited each for interview before and after the research implementation process. On discussion with the lead of the CCU OT service, she advised that the patients usually have cognitive problems, hence they may be forgetful; as shown by the fact that despite 8 people being due to attend the focus group, only 2 participated. Another potential contributing factor for low recruitment and participation, could be that the patients discharged from critical care have survived a life-threatening illness, that's a big life event, and so they may not want to engage soon after discharge in research. It is humbling that in total 4 patients were able to participate. The lead occupational therapist felt that the only

thing that could be done better next time, with this patient group, is to contact the patients a couple of hours before they were to attend the online focus group.

The number of CCU OT staff in the service were 4, not 4 WTE but 4 persons, at the start of the study and then 3 by the end of the research implementation timeframe. This is a small participant size, and as stated any outcomes will be of limited generalisability. However, the findings will still inform the evidence regarding service improvement and CCU OT. This could have improved by having more than one CCU OT service as part of the sample.

The manager of CCU OT service was interviewed before the implementation of research. However, the researcher attempted several times to interview the director of therapies who is an occupational therapist and the CEO of the organisation, unsuccessfully, as both did not respond to communications inviting them for their participation in the research. This would have provided a wider understanding from management perspectives regarding the CCU OT service.

6.4. Single researcher bias

It is widely accepted that the researcher has influence in data generation, analysis, and interpretation from the researcher and participant interaction, that is researcher bias. Researcher positionality will be discussed in more detail in chapter 7 on 'Researcher Reflexivity'. Here researcher bias and how that was kept in check to reduce the influence from being a single researcher will be discussed.

Researcher bias is described as any influence that can distort the study findings (Polit & Beck, 2014). Braun and Clarke (2022) make the observation that in research no-one else is going to decide on the interpretations made from the findings, it is the researcher that will do this, and they will justify the interpretation by grounding it in the findings. From this as a single researcher it is unavoidable that your informed viewpoint/s will be framing the research, and to reduce the influence of this bias this researcher carried out several actions:

-Kept a diary for reflections, which is part of reflexivity, understanding how the research was carried out and what shaped the process and outcomes (Nadin and

Cassell 2006), that is "*interpretation of the interpretation*" (Alvesson and Skoldberg 2000, p.6). Reflecting is part of CPD requirements of the Health and Care Professions Council for the researcher to keep up with their occupational therapy registration (HCPC 2018). Hence the researcher is familiar with the benefits of reflecting, and the diary was used to pause and take stock of certain moments during the study that the researcher felt needed further exploration and sometimes an action afterwards.

For example, the researcher questioned why she felt uncomfortable during a further conversation with the CCU OT staff about understanding their purpose, and on reflecting on the situation she realised that she felt guilty that she was upsetting them, breaking their 'comfortable' misconception that they fully understood their occupational therapy responsibilities of their role. During that conversation with the CCU OT staff she was interrupting their thinking by overly giving advice and unintentionally influencing CCU OT staff thinking. Reflecting in writing brought to the researcher's realisation that it was the burden of responsibility of nonmaleficence as part of research governance that the researcher was feeling. It is a privilege and a big responsibility to be allowed in to work with clinicians and patients, and you feel the sheer burden of putting in place measures so that you do not take advantage of the participants. The CCU OT staff had set up a WhatsApp group with the researcher to message any queries about the research, and the researcher as an action from the reflection, used that platform to not only check in with the CCU OT staff but to support them further with developing their understanding of their work through emailing a few articles from diverse perspectives. Also because of this reflection, the researcher even shared a poster that her own child had drawn to explain occupational therapy (see figure 6.1), to assist the CCU OT staff in developing their understanding of their work. The staff said that they found the poster helpful in reimagining their own poster.

Figure 6.1. Researcher's child's poster explaining occupational therapy and showing a diversity of people carrying out everyday occupations (daughter gave permission to use the poster in this PhD)

-Regular supervision sessions helped the researcher to think more deeply about the research but also elucidate areas where the researcher was narrow in perspective, hence help to reduce researcher bias. For example, the supervisors at one point kept regularly pointing out that the researcher when discussing the study was 'too wedded' to SVM. At first the researcher could not understand why this was being pointed out as she was applying SVM so why wouldn't she refer to it frequently. Hence, she was able to explore her thoughts in supervision and it became clear to the researcher what was missing was that this research is about the phenomenon of service improvement in a specific context, and that the researcher had not substantially explored the theory, history, and meanings of this in relation to healthcare in general, and then occupational therapy. This helped to develop her

introduction and literature review chapters. Supervisor scrutiny is fundamental in PhD research to reduce the impact of researcher bias. Moreover, having supervisors helped to critically review the findings and interpretations to develop a coherent structure and accessible content for the reader.

-Following the writing of the findings and the discussion of the findings chapters the researcher met with the CCU OT staff, 30 March 2023. During the meeting the researcher shared the findings and interpretations with the CCU OT staff to gain their views to be transparent and to inform the credibility and validity as part of the research. The staff expressed the findings have put into words what they were realising as they went through the research process. The staff also shared that they were not surprised by the interpretations made of the findings as this matched with the tendencies and tensions of their experience of delivering occupational therapy in this critical care service. Additionally, the PhD supervisors advised to share the draft with occupational therapists as they both were not from the field of occupational therapy. Eleven occupational therapy educators viewed the thesis, 3 viewed the whole thesis and provided feedback, and the rest viewed a combination of chapters to feedback on. This added an additional layer of scrutiny to inform credibility and validity. The PhD researcher felt she could not ethically return to her 4 patient participants, as the patients were still recovering after leaving critical care, even if it meant that the patients could not comment on the findings they contributed to.

6.5. Chapter 6 conclusion

The limitations have been elucidated in this chapter for transparency and credibility. Having a small sample and participant size may put into question the reliability of the study. However, the research applied Yin's (2018) guidance for single case study methodology, in that, the reliability is not the size of samples within the single case but is maintained through following a case study protocol (see chapter 3) and maintaining a clear chain of evidence (chapter 4). Furthermore, in relation to reliability Yin advises that the single case study is rarely repeated as it is for initial information finding to explore a phenomenon. Overall good PhD supervision and supervisory relationships, and keeping a research diary, are fundamental to identifying limitations and potential risks, and reducing their impact, thus maintaining the rigour of your research.

Chapter 7 Researcher Reflexivity

[This chapter will be written in the 1st person as it is a piece on subjectivity].
No research is neutral. Reflexivity is described as a "*concept that researchers should acknowledge and disclose their selves in their research, seeking to understand their part in it, or influence on it*" (Holmes 2020, p.2). This relates to Bordieu's (2017) notion of 'habitus'. Habitus is said to dictate and shape our world views, and that how we respond to the world depends on our habits, dispositions, and shared background (Bourdieu 2017). Reflexivity enables scrutiny of the research process from personal and professional perspectives in relation to the question under exploration (Willig 2013), to stop these having a distorting influence on the research (Herr and Andersen 2015). That is exploring and evaluating how my values, beliefs, assumptions, experiences, and my occupational therapy and academic backgrounds impact the research throughout. This chapter will be discussing my positionality, referring to positionality as evaluating "*the position that the researcher has chosen to adopt within a given research study*" (Savin-Baden and Major 2013 p.71). Declaring your positionality whether doing qualitative or quantitative research should be business as usual as it contributes towards the trustworthiness of the research (McNiff 2017). Savin-Baden and Major (2013) suggest three key ways that I can identify, develop, and evaluate my positionality by reviewing:

1) how I have located myself with the research topic, i.e., exploring the potential influence of my personal position;
2) how I have located myself with my relationship with the participants, i.e., considering how I see my position with the participants and how they may view me, of course there maybe things that I may not be consciously aware of;
3) how I have located myself with the research context and process, i.e., showing understanding that the research is influenced by me and the research context.

7.1 My personal position

I am an occupational therapist and occupational therapy educator. I am of South Asian heritage in a profession that is predominantly women who would be racialised

as white. It is not unusual for caring professions allied to medicine to be predominantly women (Collins 2019, Khunou et al. 2012). For example, the history of occupational therapy shows that women became part of its work force due to the period in history, at a time that the world wars were happening, and men were conscripted to be at the frontline of war (Collins 2019, Andersen and Reed 2017).

The topic of service improvement and the lack of representation of it in occupational therapy literature came to my attention in 2010 when I was developing a post graduate module on economic evaluation for allied health services. During research for this module, I came across Seddon's (2008) book titled 'Systems Thinking in the Public Sector: The Failure of the Reform Regime...and a Manifesto for a Better Way'. The word 'regime' and lack of occupational therapy in service improvement literature, drew me in because of my identity as an intersectional feminist, and my own struggles in navigating my career in the Eurocentric 'regime' of the NHS and higher education as a South Asian Bangladeshi woman, and because of the lack of Bangladeshi women professionals representation in UK NHS and academia. The term intersectional feminist was borne out of feminist social activism such as the writings of Bell Hooks (e.g., 1981), and critical legal studies from Kimberlé Crenshaw (e.g., 1991). I like Liu's (2020, p.1) description of intersectional feminism as "*an intellectual and political movement that identifies and challenges the ways interlocking systems of oppression impact social life, exemplified in the struggles of women of color*", because I find that the description accessibly summarises the term, and I have a sense of being able to relate to it. Furthermore, the NHS was born out of political will, Aneurin Bevan was a Labour government minister in the 1940s who brought about the existence of the NHS. It is not really disputed that healthcare is political (e.g. Clarke et al. 2021, Bourgeault 2017, Borrell 2007). Hence it is my belief that service improvement could be viewed through the social movement perspective in healthcare, as discussed in chapter 5, relating it back to healthcare being political.

Additionally, the way that SVM is conceptualised as this three phase dynamic process, bears similarity to the occupational therapy process (Hagedorn 2000), in that you gather the required information about the person and the influencing contexts, then build a picture of the problems/challenges for the person (SVM check

phase), then you plan the treatment intervention in collaboration with the patient and significant people in their lives (SVM planning phase), then administer the treatment plan (SVM do phase) and evaluate (back to the check phase in SVM). This is another reason why this particular service improvement method drew me in.

This all influenced my understanding and synthesis of the findings (see chapter 5) in several ways:

-The data collected were viewed from a systems theory and thinking standpoint due to Seddon's Vanguard Method (SVM) being the approach to the service improvement. SVM is stated as a systems thinking approach to service improvement, having influences from Ohno, Deming, and Argyris (Seddon 2003, 2008). For me the word system, conjures up a regime that is controlling what is happening for people within it, i.e., the CCU OT staff being able to deliver their work as occupational therapists. Hence the relationship to the notion of struggle within the data synthesis.

-Within the CCU OT service the occupational therapists are coming from a place of being the 'underdog', working from and being placed in the margins, then trying to work in the centre of the critical care service with the multi-professional team, who appear to have more power. Again, here is the notion of struggle manifesting from my world view.

-The CCU OT service are women occupational therapists, the whole struggle of being a woman in a 'patriarchal' NHS system (NHS England 2021a, NHS Employers 2019), the contribution of their voices provided me with their perspectives of their struggles to do good, i.e., beneficence, and deliver a fair (i.e., just) service to their patients. I felt solidarity as a woman, as an occupational therapist, in the struggles that the CCU OT staff were dealing with.

I use the word struggle because it relates to social movements and politics of change which relates to my positionality. Herr and Andersen (2015) refer to research being steeped in the politics of knowledge making and that it is dominated by the tensions of pushing it towards being packaged into a capitalist notion of professional and organisational strategy making to gain funding for further research. They go on to suggest that there is a growing acknowledgement that research has to demonstrate

post/anti-colonial approaches, to give wider representation to participants and researchers from a diversity of groups to represent the width of populations (Herr and Andersen 2015). Research in occupational therapy in general has a lack of intersectional representation because it is a white women dominated profession. Reflecting further on my research journey in this PhD, the racial bias has been white, the gender bias has been female, my only contact with a person from a Black or minoritised heritage group was the person in the research site from the research and governance department of the organisation. Hence there is still more work to do for authorities and departments to create strategies and policies for belonging and opportunities for researchers from Black and minoritised heritages, for gaining funding, carrying out research and working in research departments.

7.2. My relationship with the participants

As I progressed through the research, I felt myself vacillating between being an outsider and being an outsider that sometimes was 'feeling closer' to the group, i.e., with the CCU OT staff. I explore this further, and frame the discussion around two subjects:

7.2.1. The outsider studying the insiders

This is a traditional approach taken by researchers for both quantitative and qualitative research (Herr and Andersen 2015). In this study, I was an outsider because I was not an occupational therapist working in the organisation, nor an ex-patient of the CCU OT service. I felt this when I was interviewing the patients, the manager, and at the beginning with the CCU OT staff. It was the feeling that I shouldn't be doing this, even though I had consent from the participants. With the patients, I felt most strongly that I was intruding on their daily lives and being an imposition. This may be due to imposter phenomenon, (more recently referred to as a phenomenon rather than a syndrome e.g., Camara et al. 2022, Leonhardt et al. 2017), a phenomenon where an individual does not have belief in their academic abilities and professional accomplishments in being competent in situations (Clance and Imes 1978). This perception does not start within research but is from childhood experiences and interactions producing this perception which is termed as "*alienation as a sensation*" (Ahmed 2017, p.39). In relation to my study, the

'alienation sensation' was produced due to my perception of the power the participants hold in the success of my research. The participants have the power, as I am an outsider trying to understand their 'world', their experiences, and I rely on them to be part of the study so that I can produce the data for my study. My feelings and perceptions could also be due to me being conscious of the tension in the ethical push and pull in balancing between beneficence and non-maleficence; trying to do research that will be of benefit without creating any harm along the research journey.

I tried to counteract the imposter phenomenon through discussions about the research with my supervisors, with PhD peers, and writing in my research journal about the research process, to gain perspective and keep factual. I and my supervisors and peers reminded me that my discomfort was coming from, that I felt I was the benefactor of my research, but in thinking this way I was not remembering that this pragmatic and practical research will also benefit the CCU OT staff, the patients, the CCU manager, the CCU service, the NHS organisation where the CCU service resides, the occupational therapy profession, and in some way society. So, while I am dependent on this research for the success of gaining a PhD, there are other benefactors from my research. There were so many times in the journey that I had waves of this phenomenon, but the people around me whether in an official capacity or not, kept bringing me back to the factual reality to keep me going.

7.2.2. The outsider collaborating with the insiders

With the CCU OT staff I started to feel that as an outsider I was collaborating on the research with them as the research progressed. This may be due to me being an occupational therapist and occupational therapy educator, we could relate with each other. There was a dynamic exchange in knowledge, and it felt that there was mutual support for the research. We also 'bonded' because of our shared understanding that occupational therapy is still the lesser known profession in multi-professional teams.

Outsider positioning researchers still have influence on their participants (Herr and Anderson 2015). In my diary, I wrote regarding that I had to keep aware of power

imbalance due to me being the researcher, even though I was at ease with CCU OT staff because the staff were open to the research and friendly. I remember one staff member saying that she appreciated my mentoring, yet I did not feel that that was my role or what I was doing in supporting them in the research process. I reviewed my interactions, and the transcripts. I noted in one of the evaluations pre research implementation meetings because there was silence and the staff appeared defeated, I did do a lot of talking to support them, as I felt responsible that the evaluation into their work was upsetting them. So, following on from this, I tried not to fill the silences with advice, and if I spoke, I facilitated the silences through questioning and mirroring back what they iterated.

I felt guilty that two of the CCU OT staff participants left the organisation, both sharing that being in the research and being able to develop seeing and understanding themselves as occupational therapists, and not being able to practice fully as occupational therapists, were reasons that contributed to their decision to leave. Hence through the research process the staff were developing their professional identity and their understanding of it. This reminded me of what Seddon (2008) states, that it is not the people that needs fixing but the system for effective service improvement, that is the system breaks the people, then people breaking breaks the system. My research elucidates for this CCU OT service where to try and 'fix' the system by acting on potential leverage points in the system. In discussing this with my supervisors they asked me to think about the idea that the two staff were not sad they were happy, that they felt that the research process had improved their connection to occupational therapy.

I felt responsible for the staff in general, I wanted to support them more outside the research because at times when they realised how much or how they were not being occupational therapists due to the dominance of the medical approach they appeared hurt or defeated. But I was forbidden to do so, support the staff outside the research parameters, this is because of the research governance, because if I helped in that way, that is not part of the research protocol, that could potentially result in influencing them, I had to practice nonmaleficence for the integrity and trustworthiness of the research. I could advise that they seek support through official

channels, such as their supervisor or manager. McNiff (2017, p.72) terms what I was going through as *"cognitive and emotional dissonance*" for the researcher, i.e., where my values are in conflict or denied action because they would be in contradiction of the research ethics, governance, and academic protocols of being a PhD researcher. I sought guidance and support from my supervisors and PhD peers to help me navigate this 'turmoil'. I remember one of my supervisors saying that I was only human and why wouldn't I want to be compassionate where I was seeing someone hurting. There is a role here in considering the greater good in having a balanced ethical response, a humanising response, without thinking of it as breaking protocol. This is something I need to explore more in future.

7.3. Locating myself with the research context and process

The research context is my methodology chapter 3. The choices I made regarding ontology and epistemology to answer my research question, did match my worldviews. As an academic in higher education, I work within a continuum between positivist and constructionist realities, my work sometimes feels like a contradiction, use the quantitative data to justify my existence in academia, then apply social constructionism to develop the curricula. Also, Finlay (1998) explicates that occupational therapy is difficult to quantify as it involves, e.g., relationships, cognition, motivation, and research in the profession, and does not sit comfortably solely in the quantitative paradigm. Although RCOT (2018b) in their *Improving lives, Saving Money* campaign is trying to encourage engagement of occupational therapy in economic evaluation analyses to quantify the profession's impact, to show occupational therapy's potential value for money contribution to society.

Positioning myself in this research with the ontological perspective of critical realism seemed relatable to my interpretation of the reality of existence. As an occupational therapy educator within the philosophy and practice of the profession one of the principles is that people transform themselves through pragmatism, in that people change using what they know about themselves and knowledge of what resources, policies and legislation will help them change (Law et al. 1996, Hooper Wood 2002). This relates to service improvement as this is about changing within the boundaries of context, learning from how and why we do what we do and then transforming from

this using this knowledge. Hence the epistemology of pragmatism was chosen as it related well to my profession and the research but could also have close links with the development of professional identity in a broad sense (i.e., we develop each of our own personal identities as occupational therapists and that then forms the foundation for a stronger professional identity in a broader sense).

The research process is; the rationale for my research, how I developed the question, and justification of research method. I am located in this through my profession. I am an occupational therapist and educator. My profession is always the lesser known in allied health professions, although it is in every area of the public sector, from NHS to social care to schools and more, from physical to mental health. Hence the research has potential to illuminate further the existence of occupational therapy but also relate an important topic for service survival that is service improvement for the occupational therapy profession.

7.4. Ending thoughts

The complexity of reality is that truth is relative and attempting to 'capture' that reality through research, it is seen, experienced and created by the researcher and in my study also cocreated with the participants (Davis 2020). Reflexivity is ongoing through the whole research process and develops through the research process (Savin-Baden and Major 2013). For the researcher there is a dilemma here, to what extent do they disclose without making it sound that the trustworthiness of the research is compromised (Davis 2020). It was important then for trustworthiness that research governance is explicitly applied and demonstrated, through ethics approval, through transparency of the research rationale to development of the research method and analysis of the findings. Furthermore, the participants in my study had opportunity to give informed consent, able to access me to clarify any queries, and viewed the transcript from their interviews to check for accuracy. I also offered the to provide the participants with a summary poster after the PhD was completed. However, researcher subjectivity is both a problem and a resource, reflexivity is a useful tool in moving towards neutrality, as you cannot completely eliminate bias from the research (Finlay 1998).

Chapter 8 conclusion

8.1. Introduction

This service improvement single case study applying Seddon's Vanguard Method (SVM) to a critical care unit occupational therapy (CCU OT) service in England is original research. The study is answering an empirical question that will be of interest to the occupational therapy practice community:
How and why are service level outcomes impacted, after implementing Seddon's Vanguard Method (SVM), a service improvement framework, to an occupational therapy service in England?

The occupational therapy service in the research was in the specialty of critical care in a location in England. The scoping review identified that there were some limited case stories in health and social care applying SVM for service improvement, and only one was identified in occupational therapy which was situated in a social services setting in Wales, UK. These did not study the application of SVM in their settings under research conditions. Most of the existing research literature on service improvement in occupational therapy focusses on clinical intervention improvement rather than improving the whole service, i.e., at service user level, as opposed to service-wide context level. There was a lack of research that studied occupational therapy in health or social care using SVM to improve services. A case study methodology was applied in this study as the research explored in depth a phenomenon (service improvement) in a real-life context (occupational therapy service), and the phenomenon being studied in context is not known or well understood. Furthermore, case study methodology is relevant when the research question is asking how and why question/s as in this study's question. A mixed data collection method was employed because the problem is complex and hence beneficial to understand the phenomenon from multiple data perspectives.

Regarding the SVM process there was one aspect that was not met due to the COVID19 restrictions that were in place. That is for the researcher to observe the CCU OT staff being occupational therapists and doing their daily chores over a few days or a week. This information would have added data and another perspective

and elucidated further understanding of the workings of the service and also the enablers and barriers for the CCU OT service delivery, before the research implementation. This did have an impact in that a piece of the SVM process was not completed, although the researcher continued to follow good practice guidance for research rigor. However, the researcher has been transparent as to this omission in the process and the data that has been identified and interpreted is relevant to the context and reality of where the study took place, hence maintaining trustworthiness. Additionally, the study has demonstrated, that notwithstanding the unintended 'adapted SVM' approach, insight and learning from the stages of the process of the approach itself.

Due to COVID19 strategies the researcher carried out the whole research remotely online when liaising or interacting with the research site. Initially the researcher was worried that it would be difficult to connect with the participants. To overcome the limitations of the potential negatives of working remotely, it was important to build a trusting relationship between the staff and the researcher, have open lines of communication, offer opportunities for support and safe spaces to discuss matters confidentially as a group or as an individual, researcher sharing feedback about the research and gain feedback about the research from the shop floor regularly, and share the data collection burden where possible. This was made possible because the staff were wanting change and ready to change, hence why they volunteered to be part of the research, and open to being flexible in such difficult times for the NHS.

The conclusion chapter will discuss the original contribution from the research, what are the implications of findings and recommendations for the current CCU OT service and team, potentially for the wider CCU OT services and wider still potentially for occupational therapy practice in general regarding service improvement. Additionally, next steps for the research will be proposed. The chapter will conclude with some reflecting ending thoughts.

8.2. Original contribution from the research

The interpretations from the discussions of findings chapter in how SVM impacted service improvement for the CCU OT service and staff are:

i) The themes identified were connected within and between positive feedback loops, known as a vicious cycle, and a balancing loop.

ii) Professional identity development.

iii) Typology of struggle for CCU OT staff to deliver critical care occupational therapy service, and thus service improvement could be considered as a microcosm of social movement.

As there is a lack of research on the SVM service improvement framework with occupational therapy services, this research delivers an original contribution furthering understanding of the phenomenon of service improvement in the context of an occupational therapy service, in critical care. Overall, the original contribution to evidence is that SVM as a service improvement method is; feasible to use as a service improvement intervention in future, and the method provides learning regarding occupational therapy practice and delivery. These have potential to improve understanding of the challenges to delivering service improvement and therapists' sense of legitimacy and jurisdiction in CCU OT, to be more effective in being impactful in their service. The following discussions elucidate the original contribution of the research for this phenomenon.

The feedback loops identified through the SVM process in this research can be used to understand the behaviour of the system (CCU OT service) to then challenge the status quo through the understanding gained from double loop learning. For the CCU OT staff to understand the service through systems thinking they would need training and mentoring to consolidate theory to practice. Hence the interpretation of the themes in the research as vicious cycles and balancing loop are an original contribution to elucidating the impact of SVM service improvement in the context of the CCU OT service.

Through the CCU OT staff engaging in the SVM service improvement process, they were able to identify that they tended to refer to medical terminology over their own

professional language to legitimise their profession in critical care and being part of the multi-professional team. The CCU OT staff realised that they could be explicit regarding their jurisdiction, that is demonstrating the relationship between the occupational therapy profession, knowledge, evidence and thus legitimising the work they do in the critical care workspace (Abbott 1988). This is in essence referring to a conflict in world views - medical model perspectives of the context overriding bio-psycho-social perspectives of the profession. So, then CCU OT staff feel they need to 'repress' something that's so central to their occupational therapy identity to enable their sense of belonging, jurisdiction, and legitimacy, in the context. This is an original contribution to the SVM literature as this is not mentioned in the themes, and in general the literature identified in the scoping review. This interpretation of findings illustrates the importance for CCU OT staff to check that they are explicit with their professional language and practice when with patients and staff. To thus improve their recognition and normalise their professional presence in critical care.

If the staff are not looked after and resourced, they cannot be expected to meet patients' demands adequately, in a sense then the system is designed to set them up to do just that. It is time to reimagine and restructure that patient centred care comes from focussing on employees first. This notion of 'employees first' as organisational action for effective service delivery was put forward by Vineet Nayar (2010). Nayar (2010) states that this is just common sense, if the very people who are front facing the customers (patients) are not supported to deliver effective services, then an organisation will fail, either through loss of business or through high turnover of staff, further contributing negatively on delivering a consistently effective service delivery, which will impinge on the organisation's capital catastrophically (e.g. NHS paying out for expensive locums consistently for many years). This supports SVM literature that promotes that staff must be supported to meet the continuing service improvement needs. If staff continue to struggle to meet service demands, then engaging in service improvement is an act of resistance to interrupt the status quo and gathering together uniting around a shared goal to improve the service, hence the CCU OT staff group is behaving like a microcosm of a social movement. The discussions regarding theorising struggle and producing a typology of struggle for CCU OT staff in improving their service is an original

contribution for SVM and occupational therapy service improvement literature and evidence.

8.3. Implications of findings and recommendations

This section will discuss the implications of the research and recommendations, in relation to: CCU OT in current context, CCU OT outside current context, the occupational therapy profession, and further research.

8.3.1. Three implications for CCU OT service and staff as identified from the study are:

i) The plausible understanding from this research is that for this CCU OT service staff, the management, (not just meaning the direct manager), must work with the CCU OT staff to find answers to go forward regarding the topics summarised in chapter 5. SVM directs that for service improvement the redesigning is built to meet the variability of demands from service users (Seddon 2003, 2008). For the demands to be met the staff must be resourced and have access to people in the organisation with expertise and or power to make things happen (Seddon 2003. 2008), they cannot work with silo mentality. It needs to be added that staff meeting the demands is also intertwined with staff being supported to own their professional identity without conflict/barriers and microinvalidations.

ii) The study identified from feedback loops, the potential points of action for change (system levers) for the CCU OT service that can be acted upon to interrupt the vicious cycle (reinforcing loop contributing to service ineffectiveness) and enhance the balancing loop (counterintuitive to interrupt the vicious cycle), points to act on the system are identified as at service level: staffing levels, funding arrangements, job descriptions, not doing bed flow management out the CCU, feeling they have the power and agency to make change happen.

iii) In relation to professional identity, CCU OT staff identified how they had been 'downplaying' this to feel 'legitimate' as a profession. The CCU OT staff identified that they needed to change this to improve their identity and professional presence. The study identified that the CCU OT staff should use, speak, and write from their profession specific perspectives. This potentially could start to normalise their language and work within the critical care unit for them, which will then translate to

the multi-professional team. This will start to improve the presence of the CCU OT service and will also assist patients to differentiate/discriminate CCU OT service and staff contribution to their treatment pathway and recovery.

8.3.2. Two potential implications for CCU OT outside of current context are:

i) For other occupational therapy services in critical care, it may be useful to consider service improvement using SVM to elucidate what are their service system's vicious cycles and balancing loops (feedback loops), and what are the drivers for these loops for their services. This will assist them to continuously improve understanding of their service provision and how to plan improvement, thus checking in on the benefits of occupational therapy intervention to effectively meet patients' variable demands.

ii) In general, CCU OT staff could also review how they are promoting and positioning occupational therapy, and themselves as occupational therapists, through their language, communications, and outcome measures. Thus, in this relatively new area of working for occupational therapists, they deliberately, pragmatically, and practically take actions to make the profession visible and heard. This will assist to strengthen professional identity, so that patients will be able to identify them and develop understanding of the profession's contribution in their recovery process, and the multi-professional team will be better able to work with them and use the occupational therapists' expertise more effectively in the care pathway.

8.3.3. Two potential wider implications for occupational therapy profession are:

i) Overall, the research has identified practical areas to act on for service improvement for current CCU OT service and wider, using the SVM as the approach to service improvement. Hence there is potential for occupational therapists in other specialities to trial the SVM process for their service improvement, to identify where the push (components of vicious cycles) and pull (components of balancing loops) factors are in their service to better design a service that meets the demands of the service users. They should document the process from beginning to end, and during, taking field notes to reflect on what happens and what reasoned actions are taken. In

that way occupational therapists grow practice-based evidence collected from their service delivery.

ii) Occupational therapy practitioners should evaluate how they are doing in relation to their professional identity, as this is an indicator of how they are applying and promoting occupational therapy from the profession's perspective. They could critically reflect on whether they are working within their jurisdiction or being dominated by the medical approach, and how they could improve their occupational therapy jurisdiction. As part of improving professional identity and presence, occupational therapists should find outcome measures that showcase the impact of their service. This will grow practice data, and hence evidence of the impact on patient care pathway/recovery. So that the data will improve on the effectiveness of intervention for the benefit of the patients in their care.

8.3.4. Two potential wider implications for pre-reg occupational therapy education are:

i) There is potential for occupational therapy pre-reg training programmes to use the research findings, from this PhD, to be strategic in embedding the topic that could thread through all the different levels of the curriculum content (including clinical training). This is to expose the students to the skills and necessity of service improvement for them to then be able to learn to evidence their occupational therapy work as a service. This will also help students to understand how to improve their presence and sense of being within the public sector, and a potential positive predictor for consolidation of professional occupational therapy identity. Students will then start to understand their agency in change making contextualised to occupation therapy service. Furthermore, how learning about service improvement is within their professional jurisdiction and help to nurture their professional identity. By strategic integration of service improvement within the curriculum. To hopefully take this forward and apply it when they become newly qualified therapists, to promote and improve their legitimacy and identity as occupational therapists. By doing this the students can develop meeting number 12 of the standards of proficiency for occupational therapists of the regulatory body HCPC (2023), "be able to assure the quality of their practice", which refers to involvement in quality improvement.

ii) There is another potential opportunity for pre-reg training for occupational therapy to use the research findings to be strategic within levels of studying of the curriculum content (including clinical training) to thread the concept of professional identity with developing complexity. To remind and develop the students' sense of being as an occupational therapist, meaning how to maintain and grow professional identity once newly qualified. Doing this will in turn promote and go towards establishing the presence of the occupational therapy profession and service. The topic can be embedded as a thread through the different levels of curriculum content and clinical training. Doing activities to elucidate this will improve the students' understanding of the profession, and how to promote the profession in a medical dominated healthcare system, e.g., identify and work with outcome measures to showcase occupational therapy intervention.

8.3.5. Potential future research

Two broad areas for occupational therapy research are implied:

i) It would be beneficial to investigate the application of SVM service improvement at multiple sites as part of an explanatory case study methodology, or as a multiple site action research study. This would add to the evidence of what is already known about occupational therapy service improvement, but more so regarding SVM as applied to occupational therapy services. Moreover, this would further elucidate the impact of SVM on occupational therapy service improvement, explaining what happens, how it happens and why it occurs. The UK requires more research on critical care occupational therapy services, this is a relatively new field pushed forwards due to COVID19, and this focus on the research will build evidence for the specialty.

ii) It would be beneficial to research this topic in relation to exploring legitimacy and jurisdiction perceptions of occupational therapy in healthcare from multiple viewpoints, e.g., occupational therapists, patients/service users, members of multi-professional team. To then also explore this in relation to service effectiveness applying an outcome measure related to occupational therapy. This would add to the current evidence regarding occupational therapy identity and service effectiveness in relation to justification of occupational therapy in services.

It would be good to publish the findings and journeys from this research, to improve the occupational therapy professions presence whether that be research or other types of article submissions, for the profession and outside it, in journals, newspapers, or other types of publications that can reach patients and professionals. So that it interrupts the dominance of medical model approach of occupational therapy profession in healthcare, and the dominance of publications from traditional medical based professions on service improvement, e.g., medics, nurses, physiotherapists. As well as potentially demonstrating to occupational therapists working in places where they perhaps feel that they *have to* fit themselves within pre-defined medical models, that there are ways to remain true to non-medical world views. This will disseminate knowledge and understanding of the profession, of service improvement, from its occupational therapy professional and practice-based perspectives and roots.

8.4. Next steps

The next steps would be regarding dissemination of the findings from this research, presenting at conference, and presenting to learning and development boards too, The potential implications for occupational therapy profession and practice from the findings. It is proposed this could be delivered in three ways:

-publishing the findings and implications in a peer reviewed journal, and presenting the findings and implications in a conference or a webinar;

-working with an organisation to improve the focus on professional identity and promoting service improvement in the profession;

-collaborating with researcher's work colleagues regarding improving the content of service improvement, professional identity, and professional specific outcome measures in the curriculum.

8.4.1. Publishing findings and implications in peer reviewed journal

It will be beneficial to submit to the British Journal of Occupational Therapy an impact factor (IF) of 1.24, ("the IF of a journal is the average number of citations received per article published in that journal during the 2 preceding years" (Sharma et al. 2014 p.146)), and an H-factor of 49 (this factor is the highest number of citations from papers published in the journal). Additionally, it would be good to

submit to an international peer reviewed journal to gain wider reach, e.g., International Journal of Healthcare Management or International Journal of Quality in Health Care. Acceptance of submission to a journal is recognition of the relevancy of the topic for the community that the journal is for. If successful in completion of the PhD, the researcher will submit one article within a year after graduation. The scoping literature review of this study has been published in the British Journal of Healthcare Management in 2022, this journal has an impact factor of 0.544 and an H-factor of 18.

Presenting at conferences and or webinars relevant to service improvement, and or occupational therapy, offer another opportunity to disseminate information from the study. These platforms will enable the researcher to gain peer feedback and scrutiny in real time. Potential conferences to consider are the Royal College of Occupational Therapists (RCOT) or the NET AdvanceHE (networking for education in healthcare).

8.4.2. Working with an organisation to improve the focus on professional identity and promoting service improvement in the profession

It would be good to create an opportunity with RCOT to create a continuing series of webinars regarding improving professional identity and how to review, revise and reframe services to improve the effectiveness of occupational therapy services. The researcher has experience in creating and delivering webinars and webinar series and could join with RCOT for national reach regarding the topics. RCOT has an Innovation Hub on their website (https://www.rcot.co.uk/innovation-hub), to support innovation ideas to be presented as case studies, so this could be an avenue to present the research findings.

8.4.3. Collaborating with work colleagues regarding innovations to the current curriculum relating to professional identity and service improvement

The PhD author of this thesis could collaborate with their current colleagues at work delivering the occupational therapy programme, to review and revise the content on professional identity (formation, improvement and sustaining) and service improvement in relation to SVM, at every level of the curriculum. This will help to disseminate the findings from the PhD to occupational therapists in training and

integrate it into curriculum for the benefit of students who are to become newly qualified practitioners. This could potentially impact the presence and practice of occupational therapy for the benefit of patients, and multi-professional teams that have occupational therapy services in their specialty.

8.5. Ending thoughts

From this original research the case study methodology has enabled exploration of the phenomenon of service improvement using the SVM service improvement method in a CCU OT service. SVM is bringing to attention the human side of service improvement, and although the focus is designing the service on the demands of the service users, a narrow perspective, it is the staff that have to be supported and sustained to deliver this. Hence this study adds evidence to the findings from the scoping review regarding supporting the staff through resources and funding to keep improving the service. Researching service improvement in CCU OT service using SVM, has highlighted that there is connection on acting on the system by using systems levers at service level, that is the service level outcomes as identified by staff (see table 5.1., page 171-172).

Furthermore, the research is encouraging normalising occupational therapy practice in critical care, by explicitly using the professional-specific language and developing a purpose of the service that is for the occupational therapy service user, to develop and sustain professional identity. The research is new to understand service improvement for the CCU OT service using SVM and adding to the evidence on the notion of theorising struggle for the CCU OT staff to deliver service improvement. This study has been an exploratory study for the plausibility of studying the phenomenon of service improvement using SVM in a CCU OT service. This research is a novel way of understanding the influential areas for change to improve CCU OT service in this case, but also identifies points at which an experiment could be developed to test this in future research.

Hence, future studies are needed to add to this evidence by carrying out the research in more than one site of CCU OT services or different occupational therapy services, implementing the research for over a year.

The empirical evidence is rooted in the data, formulating understanding of the factors that influence the identified service level outcomes, and additionally the development of professional identity through the SVM service improvement process in this specific case, CCU OT. This research adds to the evidence base of service improvement in three ways: general service improvement, service improvement applying SVM and occupational therapy service improvement. The synthesis of the data has allowed understanding of the impact of the influential factors for service effectiveness from service improvement, from a systems perspective of feedback loops, and the relationship of professional identity to motivating the staff to be involved in continuing service improvement. Furthermore, the synthesis of the data has enabled identifying of a typology of struggle for this CCU OT staff in improving the service to deliver it effectively.

The thesis writing is being completed during the 'winter of discontent' in the NHS, where nurses, junior doctors and paramedic staff groups are striking. The nurses are striking in the largest numbers in their history, the paramedics and ambulance workers are striking after 30 years. The occupational therapy staff in the NHS have also been on strike as their union balloted and gained agreement to strike from their members, but with their union they have accepted the pay offer. Furthermore, the academics at universities are striking, and they include those that are teaching the future NHS workforce. They are all striking because they state their pay does not cover living costs and their working conditions are not looking after them or enabling them to do their jobs, i.e., staff shortage and lack of improvement in services is affecting their career development, their wellbeing as professionals, and potentially compromising patient safety (e.g., news reports RCN press office https://twitter.com/RCN_Press/status/1605299527581564928?s=20&t=SMmml8kR_9QWOgZK8L4dIQ or the occupational therapy professional body statement https://www.rcot.co.uk/news/unison-asks-members-approve-industrial-action-over-nhs-pay). The findings from the research in general align with what the NHS and ambulance and paramedic staff are asking for to improve the current state of the healthcare services.

8.5.1. The takeaways for the reader regarding this research are that:

i) SVM helped to humanise the process of service improvement, service improvement is about people making changes for the benefit of people, i.e., patients and staff, which will benefit the organisation in the end. For service improvement to be effective the staff have to be heard, supported, resourced and funded to do this.
ii) Occupational therapists should review how they are engaging with their professional identity, and review what actions they are taking to continue developing and sustaining it in context. This could enable occupational therapists to be identifiable to patients and improve understanding of their profession within multi-professional teams, thus establishing their jurisdiction and legitimacy in the service.
iii) Using Seddon's Vanguard Method has raised that taking a systems thinking approach to service improvement could help to identify the layers of, seen and hidden, enablers and barriers to their service delivery. To then understand where the occupational therapists have direct influence for change and where they have to access people with power to enable change. This could help to reduce vicious cycles of feedback loops and enhance the impact of balancing feedback loops
iv) This study adds evidence to the findings from the scoping review in regard to delivering an effective service, that is the staff have to be looked after, through staffing levels, funding, resources, training/CPD, and having access to people in the organisation who can make changes happen.

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Appendices

Appendix 1 Excel spreadsheet collating scoping review literature

Summary of papers for analysis for scoping literature review

Author	Type of literature	Setting	Research yes or no	Purpose	Findings/Outcomes
Allder S., pages 135-147 cited in Pell (2012)	Book chapter	Plymouth hospitals trust, specialist stroke units	No, service report	Showcase a service implementing the Vanguard Method	Carer satisfaction improved, Timeliness in referral to stroke unit improve. Timeliness of tests improved. Reduction in beds required. Cost savings.
Anderson A., Parkyn F. pages 93-112 cited in Pell (2012)	Book chapter	NHS Somerset and Somerset county council integration, reablement service	No, service report	Showcase a service implementing the Vanguard Method	New purpose identified for the service. The qualitative evaluation from patients, staff & clinicians very positive. Efficiency improvements seen through reduction in hospital stay, package of care and reduce carer strain and; prevention in hospital admissions, package of care, equipment provision and, admission to care home. Additional initial cost of social care during reablement period can be offset by reduced need following reablement. Redesigned reablement team had better outcomes.
Gibson J., and	Journal article	Children's social services in England &	No, service report	Showcase a service implementing	New purpose identified for the service. Reduction in wasteful activity, that is

O'Donovan B., (2014)		Wales, doesn't identify how many		the Vanguard Method	work that did not meet the needs of the child/family. New measures in terms of impact & improvement for the child/family. Increased the capacity of social workers to work face to face with child/family & managers not preoccupied with managing costs.
Jaaron A.A.M., Backhouse C.J., (2017)	Journal article	Two case studies conducted, only relevant adult social care services in the UK (north Wales) focused on post SVM implementation	Yes	Investigates the impact of applying the Vanguard Method, in order to activate ''double-loop'' learning in service organisations	The results show a high level of organisational learning capabilities at both sites.
O'Donovan B., Pages 40-66 cited in Zokaei et al (2011)	Book chapter	English local authority adult social care	No, service report	Showcase a service implementing the Vanguard Method	New purpose identified for the service. Early evidence shows low cost early provision was preventing later higher cost provision. New customer driven measure identified: right first time. Increase in first time right cases. End to end time reduced. Reduction in cost per case and administrations costs.
Zokaei et al., (2010)	Consultancy report	Cases from 3 council services: A – Neath Port	No, service report	Showcase three services implementing	New purpose identified for all the services.

		Talbot County Borough Council (DFG Occupational Therapy) B – Blaenau Gwent County Borough Council (Housing/Council Tax Benefits) C – Portsmouth City Council (housing management service)		the Vanguard Method	Reduction in end to end time of the service process. Improvement in work capacity. Reduction in preventable failure/wasteful activity because getting the work right first time. Reduction in work backlog. Cost savings.

Appendix 2 Patient participant consent form

Research Project Participant Consent Form

Full title of Project: Evaluating service level outcomes from the implementation of Seddon's Vanguard Method for service improvement on an occupational therapy service in England: An action research case study

Name: Musharrat J Ahmed-Landeryou
Researcher Position: Senior Lecturer, School of Health and Social Care
Contact details of Researcher: **email:** ahmedlmj@lsbu.ac.uk
telephone: 0207 815 8454 / 07963088373

Please read each item **carefully** to enable you to **make a considered yes or no decision**. **Each item** MUST to be **initialled** after your choice is made. Please **fill both copies** of the consent form provided.

Taking part **(please click on the box that applies and initial each row to confirm your selection of yes or no)** **[if completing by hand place a cross in the chosen box]**	**Yes**	**No**	**Please initial**
I confirm that I have read and understood the items for consent presented in this form for the identified research.	☐	☐	
I confirm that I have had the opportunity to consider the information in the participant information sheet, and ask questions that have been answered to my satisfaction.	☐	☐	
I consent to be a voluntary participant in this study, I understand that I can refuse to answer questions, and that I am free to withdraw at any time without providing a reason.	☐	☐	
I confirm that I understand my choice for each item in this consent form by initialling each choice made.	☐	☐	
I confirm that I understand that not consenting to any one of the items may be deemed as declining to participate in the research.	☐	☐	
I agree to keep all discussions within the discussion (focus) group confidential.	☐	☐	

PLEASE TURN THE PAGE OVER

Please read each item **carefully** to enable you to **make a considered yes or no decision**. **Each item** MUST to be **initialled** after your choice is made. Please **fill both copies** of the consent form provided.

Use of my information **(please click on the box that applies and initial each row to confirm your selection of yes or no)** **[if completing by hand place a cross in the chosen box]**	**Yes**	**No**	**Please initial**
I understand my personal details such as phone number and address will not be revealed to people outside the project.	☐	☐	
I consent to the focus group being audio recorded.	☐	☐	
I understand and give consent to my anonymised data/words being quoted in publications, reports, posters, web pages, and other research outputs.	☐	☐	

Name of Participant (PRINT) _____ Date _____ Signature _____

Name of Researcher (PRINT) _____ Date _____ Signature _____

Appendix 3 Patient participant information sheet

Participant information sheet

1. Why am I invited to take part?

You are invited to take part in this study as you have shown initial interest to be involved in a focus group to review the occupational therapy service, and have experience of the occupational therapy service.

-you are a person who has used the service and has been discharged;

-you have access to the internet and a laptop/pc/tablet

You have been sent the information sheet and 2x consent forms.

2. Research title and contact details

Full title of Project: Evaluating service level outcomes from the implementation of Seddon's Vanguard Method for service improvement in an occupational therapy service in England: An action research case study

Name: Musharrat J Ahmed-Landeryou

Researcher Position: Senior Lecturer, School of Health and Social Care

Contact details of Researcher - email: ahmedlmj@lsbu.ac.uk,

telephone: 0207 815 8454 / 07963088373

3. What is the purpose of the study?

The research aims to test and understand a new way of working out how to improve an occupational therapy service

The rationale for the study is that current methods to improve services are usually from the manufacturing industry, designed to manage factory production line outputs. Seddon's service improvement method is specifically designed for health and social care, which includes occupational therapy services.

4. Do I have to take part?

Your participation is voluntary, you do not have to take part if you do not wish to.

If you do decide to take part, I will answer any further questions you may have. If you feel I have answered all your questions and you would still like to take part, you will need to complete and sign both the consent forms to confirm agreement to take part. Keep the consent forms safe and bring them both with you on the day of the focus group and I will sign both, I will keep one and you keep one for your records.

If you do not decide to take part this does not affect your access to the service in future or involvement in current or future public involvement projects.

5. What will happen if I take part?

You will be asked to attend one group discussion, commonly known as a focus group, of 6-8 discharged/past users of the service, at a date and venue to be confirmed. I am particularly interested to hear about your experiences of the occupational therapy service. You will therefore be asked some questions about your experiences and views of the occupational therapy service. The prompt questions for the group discussion will be screened and cleared by the researcher's supervisor and service users who have reviewed them before use.

The group discussion will last a maximum of 1 hour. The discussion will be audio recorded to ensure that I capture all of the discussion. Before recording starts, you will choose a pseudonym (a name that is not yours) from a provided list, which is to be used by you and the focus group members during the group discussions to maintain your anonymity during the discussions and reporting of findings, (to reduce the possibility of you being identified).

There is no payment for participating in the study or travel expenses.

<u>Running focus groups under COVID19 restrictions</u>

To comply with health and safety requirements under COVID19 there are two options for the locations:

1- A room in the building/organisation where the occupational therapy service is located. The room will be compliant with the clean requirements under COVID19 and the organisation's risk assessment, the researcher will check this has happened by liaising with the domestic services of the organisation before the date of the session. The venue/room will be large

enough for social distancing and all participants will be required to wear masks.

2- If option 1 is not possible, then the focus groups will be held on a digital platform such as ZOOM. A member of staff from the occupational therapy service will email the instructions for joining the focus group to participants a few days before the event date.

6. What do I have to do?

Once the date and time has been confirmed with you, you will be given any travel directions or instructions to the venue and room. If you can, it would be very helpful to arrive 10 minutes before the group discussion commences so that we can all familiarise ourselves with the surroundings. As this will be a group discussion, all you will need to do is be prepared to discuss your experiences of the occupational therapy service.

You do not have to prepare anything before the meeting. If you cannot make the appointment, please let me know by contacting me on my mobile number: [removed]

7. What are possible benefits of taking part?

This information is of local and national importance to enable delivery of an effective occupational therapy service that works for you and other service users. Your valuable input will enable the occupational therapy service to be informed about whether they are meeting what matters to you and fellow service users, and the quality and effectiveness of the

service delivery. The information will inform the study in the ways to maintain what works well and the ways to develop and maintain suggested changes.

8. What are possible disadvantages of taking part?

This study does not aim to explore particularly sensitive information.

One possible disadvantage of taking part is that you may become distressed when discussing your experience of the occupational therapy service, or hearing about the experiences of others. If you become distressed during the focus group then you will be given the option to stop for a break or terminate the discussion. If you wish to leave and did not come with anyone, you will be asked if someone could come and pick you up, and the researcher would make sure a member of staff is available to wait with you. Or, you may be asked if you wish to see the patient advisory liaison service (or similar of the service), in this case you will be taken to this service.

9. Will my taking part in this study be kept confidential?

We advise you that your confidentiality will be respected at all times, unless there are compelling and legitimate reasons for this to be breached. We have a duty of care to report to the relevant authorities any possible harm or danger to participants or others in line with the research code of conduct.

All information which is collected about you during the course of the research will comply with GDPR and Data Protection Act 1998 , protecting your rights and privacy.

GDPR stands for the General Data Protection Regulation. In the UK we follow the GDPR rules and have a law called the Data Protection Act. All research using patient data must follow UK laws and rules.

Universities, NHS organisations and companies may use patient/service user data to do research to make health and care better.

Universities and the NHS are funded from taxes and they are expected to do research as part of their job. They still need to be able to prove that they need to use patient/service user data for the research. In legal terms this means that they use patient data as part of 'a task in the public interest'.
If they could do the research without using patient/service user data they would not be allowed to get your data.

Researchers must show that their research takes account of the views of patients/service users and ordinary members of the public. They must also show how they protect the privacy of the people who take part. An NHS research ethics committee checks this before the research starts.

Also, overall I will keep compliance with the:

College of Occupational Therapists: Code of Ethics and Professional Conduct 2015;

School of Health and Social Care's Code of Conduct for Research.

Any information about you which is shared with others (e.g. shared with other members of the research team or in reports and publications) will

have your name removed, and will refer to you by the pseudonym you chose during the focus group, to reduce the probability of identification.

The consent form that contains your details will be stored in a secure locked draw within the university office and shredded once the research is completed.

Electronic data files will be stored for a minimum of 5 years after the study has been completed. Electronic data files (from which you cannot be identified) will be stored in a password secured computer and backed up on a password protected drive. Only members of the research team will have access to the data.

10. What if I change my mind about taking part?

Your participation is voluntary and you can withdraw at any time from the study.

11. What will happen to the results of the research study?

The results of the study will be included in the PhD dissertation. The results may be submitted for publication in an academic journal and may be presented at conferences. No individual data will be presented or reported that could identify you in any report or publication. If you would like to receive a copy of the paper, once published, please get in touch with the principal researcher Musharrat J. Ahmed-Landeryou

ahmedlmj@lsbu.ac.uk

12. Who is organising and funding the research?

This research is organised and funded by London South Bank University, School of Health and Social Care for PhD studies. The PhD studies programme director for the School of Health and Social Care is Professor Nicola Thomas and she is also the representative for the sponsor Professor Warren Turner of the School of Health and Social Care.

13. Who has reviewed the study?

This study has been reviewed and approved by the School of Health and Social Care Ethics Panel at London South Bank University hscsep@lsb.ac.uk and, the Health Research Authority Research Ethics Committee.

14. Contact for Further Information or If You Have A Complaint

If you would like further information or have a complaint about this research or the researcher, please get in touch with the Director of Studies. Her contact details are:

Professor Nicola Thomas
Programme Director of PhD studies in the School of Health and Social Care
London South Bank University

103 Borough Road,

London SE1 0AA

Email: nicola.thomas@lsbu.ac.uk

Desk phone: 020 7815 8045

Thank you for your time.

Appendix 4 Cover letter

(insert your name & work address)

(insert date)

(insert their address)

Dear (insert name)

My name is [insert name] and I am the lead occupational therapist in the critical care unit.

We would like you to join us in evaluating the critical care occupational therapy service as part of our commitment to continually keep improving the service. We have a PhD student, Musharrat Ahmed-Landeryou, who is helping us with this currently. We have attached the information booklet regarding the research and the consent form. If you are interested to join us in a group conversation in evaluating the service, please sign the consent form and **return it to me in the self addressed envelope** (will it be ready stamped too?).

If you would like to discuss further or if you wish not to be included do let me know by contacting me on: (email)

I will make a follow up phone call (insert date) to check if you have received the letter or if you have any questions.

We very much hope you will be able to join us in continually improving our service for you and the public.

Kind Regards,

[insert name]

Lead critical care occupational therapist

Appendix 5 Certificate for online mental health course completed as recommended to do so by NHS HRA

ACCREDITED CPD CENTRE
THE CPD STANDARDS OFFICE
CPD PROVIDER: 60036
2018 - 2020
www.cpdstandards.com

Accredited cpd Centre

Certificate of Achievement

This is to certify that

Musharrat Ahmed-Landeryou

Has completed the following CPD accredited activity

Mental Capacity Act (MCA): e-learning course

On 19/07/2020

With a score of 100%

Delivered by

Social Care Institute for Excellence

The CPD Standards Office: Provider No: 60036

Kathryn Smith
Chief Executive

Appendix 6 Multidimension Motivation at Work Scale (MMWS) Questionnaire (Gagné et al 2015)

"Using the scale below, please indicate for each of the following statements to what degree they presently correspond to one of the reasons for which you are doing this specific job":

1= not at all; **2**= very little; **3** = a little; **4** = moderately;

5 = strongly; **6** = very strongly; **7**= exactly

Types of motivation at work	**Reason for doing the job**	**Score**
Intrins1	Because I enjoy this work very much	
Intrins2	Because I have fun doing my job	
Intrins3	For the moments of pleasure that this job brings me	
Ident1	I chose this job because it allows me to reach my life goals	
Ident2	Because this job fulfils my career plans	
Ident3	Because this job fits my personal values	
Intro1	Because I have to be the best in my job, I have to be a "winner"	
Intro2	Because my work is my life and I don't want to fail	
Intro3	Because my reputation depends on it	
Ext1	Because this job affords me a certain standard of living	
Ext2	Because it allows me to make a lot of money	
Ext3	I do this job for the paycheck	

(Intrins = intrinsic, Ident = identified regulation, Intro = introjected regulation, Ext = external regulation)

Gagné M. et al., (2010), The Motivation at Work Scale: Validation evidence in two languages, *Educational and Psychological Measurement*, 70(4): 628–646 DOI: 10.1177/0013164409355698

Appendix 7 Script of the introduction at start of the focus group for patient participants

(Zoom version)

Welcome and thank you for attending the focus group.

My name is Musharrat Ahmed-Landeryou.

Just some housekeeping before we start. Please make sure you have a drink near by. If you are not speaking please turn your mic off, just to keep the background noise to a minimum. When you want to contribute please turn your mike on. If you need to pop away from the screen please again make sure your mic is off. To help with turn taking to speak you can physically raise your hand or there is a reaction button and you can press the waving hand and it will pop up on your screen. If you need to send me a message privately, there is a chat function, and if you press that, and then where it states 'everyone' if you press the little arrow next to it, you will find my name in the drop down box, click on it, and then write your message in the allocated area and press the paper plane symbol, and the message will come to me only.

Before I start, I would like to remind us of the purpose of the discussion focus group and the ground rules of the group, so that we are all clear about the expectations in relation to this session.

The intention of the group is for you to discuss your views and experiences of the occupational therapy service. This will help us gain information to understand what was good and needs to keep going, and what needs to potentially be changed to improve the service for the benefit of both service users and staff.

Just to remind you that the discussion will be audio recorded to remind me of your discussions, so that I can accurately understand and analyse the information you provide.

To help to maintain anonymity/ keep your identity private, I have a list of names for you to choose from (show on share screen). So that during the recorded discussions you will be referred to using this pseudonym/this pretend name. Once you have made your choice please right click on your current name on the screen, then click rename and change your name. So now everyone in the group can see your pseudonym and refer to it during the discussions.

It is good practice to set some ground rules before the discussion starts so that we are all clear as to the expectations of ourselves and each other. This includes how we conduct ourselves during the group discussions.

Ground rules for the focus group (PUT UP GROUND RULES TO VIEW DURING SESSION):

o Participation in the focus group is voluntary

o The focus group is not a support group

o Please wait for a person to finish before taking your turn to speak

o It's alright to abstain from discussing specific topics if you are not comfortable

o All responses are valid—there are no right or wrong answers

o Please respect the opinions of others even if you don't agree

o Try to stay on topic; we may need to interrupt so that we can cover all the material

o Speak as openly as you feel comfortable

o Avoid revealing very detailed information about your personal health (the person health will not be included for staff focus group)

o Help protect others' privacy by not discussing details outside the group

I will ask you one main question. If the conversation slows down, I have some prompt questions to help the conversation to re-energise.

We are here for about an hour, I will enable the last conversations to finish before I end the session. If you have any further questions, I will give you an

opportunity to ask them at the end of the focus group or if you wish to you can email me and I will answer you on this platform.

Thank you again for taking part.

To keep you informed, after the study has finished, I will make a poster to sum up the outcomes from the research and share it with you if you wish. Just let me know at the end of the session if you would like me to email the poster to you.

Thank you.

So, the main question is: what is your experience of the occupational therapy service delivery, what was/is good, what could be better and what needs improving?

Over to you.

Appendix 8 Research protocol for the NHS HRA ethics committee, table of contents only

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Table 4.1 Ninety patients from CCU OT service with some information about their interventions years 2019-2021 (the shaded area shows start and finish of COVID19 government strategies for hospitals)

patient year & number	no. of Occupational Therapy sessions	no. of Occupational Therapy intervention hours	no. of sessions missed	no. of days referral to 1st contact
2019 (1)	5	3.5	13	2
2019 (2)	9	4.9	14	13
2019 (3)	3	1.45	11	7
2019 (4)	7	2.45	14	3
2019 (5)	4	3.2	5	3
2019 (6)	4	4.1	12	0
2019 (7)	47	62.1	18	0
2019 (8)	6	3.9	15	30
2019 (9)	5	4.3	5	3
2019 (10)	8	6.41	10	12
2019 (11)	1	1	4	0
2019 (12)	3	2	1	0
2019 (13)	2	2.3	2	0
2019 (14)	2	2.4	1	0
2019 (15)	14	11.75	25	19
2019 (16)	14	29.5	15	0
2019 (17)	3	2	1	0
2019 (18)	10	11	2	3
2019 (19)	6	3.5	12	2
2019 (20)	9	7.25	13	4
2019 (21)	8	7	3	4
2019 (22)	9	7.25	4	2

2019 (23)	9	13.75	6	0
2019 (24)	19	17	18	16
2019 (25)	20	16.1	23	17
2019 (26)	5	4	4	0
2019 (27)	7	8	9	0
2019 (28)	15	15	20	0
2019 (29)	6	8	6	0
2019 (30)	14	10.3	13	5
2020 (1)	4	1.5	2	10
2020 (2)	10	11	15	0
2020 (3)	17	13.5	21	0
2020 (4)	3	2.5	3	0
2020 (5)	11	10.6	14	6
2020 (6)	8	8	13	1
2020 (7)	3	1.5	2	0
2020 (8)	5	4.3	4	0
2020 (9)	1	1	0	0
2020 (10)	1.5	2	2	0
2020 (11)	4	3	2	1
2020 (12)	6	8	11	0
2020 (13)	4	1.5	9	1
2020 (14)	2	0.5	0	0
2020 (15)	3	3	0	0
2020 (16)	2	1.5	1	0
2020 (17)	5	5.45	3	0
2020 (18)	7	6	11	0
2020(19)	2	1.45	2	0
2020 (20)	6	5	4	0
2020 (21)	2	1.5	0	0
2020 (22)	3	1.5	1	0
2020 (23)	4	3	3	0
2020 (24)	4	3.6	6	1
2020 (25)	8	10	21	0

2020 (26)	6	5	10	0
2020 (27)	4	2	3	1
2020 (28)	2	3	4	3
2020 (29)	1	1	4	0
2020 (30)	3	4	12	2
2021 (1)	9	7.5	20	0
2021 (2)	4	3	33	8
2021 (3)	2	6.5	0	0
2021 (4)	3	4	5	0
2021 (5)	1	0.5	5	0
2021 (6)	2	1	15	0
2021 (7)	16	17.41	26	0
2021 (8)	3	5.5	16	0
2021 (9)	12	13	40	2
2021 (10)	4	3.91	9	0
2021 (11)	5	3.5	8	5
2021 (12)	15	20.3	15	1
2021 (13)	3	2	9	0
2021 (14)	4	4	11	1
2021 (15)	1	0.5	12	0
2021 (16)	2	3	3	2
2021 (17)	3	5.5	0	0
2021 (18)	1	3	3	2
2021 (19)	1	1	3	1
2021 (20)	4	3.5	4	0
2021 (21)	4	5	6	0
2021 (22)	1	1	9	0
2021 (23)	5	3.5	10	0
2021 (24)	4	2.5	11	2
2021 (25)	8	9.5	12	0
2021 (26)	3	2.5	3	0
2021 (27)	2	1.5	2	0
2021 (28)	7	6	7	0

2021 (29)	1	1	1	0
2021 (30)	5	7	11	0

Table 4.2 Ninety patients from CCU OT service categorisation of their missed intervention sessions, years 2019-2021

patient year & number	reason for missed session -A (Pt not ready)	reason for missed session -B (Pt unwell)	reason for missed session -C (Resources includes & usually staffing)	reason for missed session -D (Declined)	reason for missed session -E (Pt could not tolerate)
2019 (1)	1	2	9	0	0
2019 (2)	0	0	6	0	0
2019 (3)	0	1	8	0	0
2019 (4)	1	1	4	0	1
2019 (5)	0	3	1	0	1
2019 (6)	0	1	9	0	0
2019 (7)	1	1	15	0	0
2019 (8)	1	2	10	0	0
2019 (9)	0	0	5	0	0
2019 (10)	0	0	8	0	0
2019 (11)	0	0	4	0	0
2019 (12)	0	0	0	0	1
2019 (13)	0	0	2	0	0
2019 (14)	0	0	1	0	0
2019 (15)	0	11	14	0	0
2019 (16)	0	0	7	0	0
2019 (17)	0	0	0	0	0
2019 (18)	0	1	1	0	0
2019 (19)	0	8	0	0	0
2019 (20)	0	3	10	0	0
2019 (21)	0	0	1	0	0
2019 (22)	1	0	3	0	0

2019 (23)	0	0	6	0	0
2019 (24)	0	3	13	1	0
2019 (25)	0	7	10	0	0
2019 (26)	0	0	0	1	0
2019 (27)	0	2	6	0	0
2019 (28)	0	1	13	0	0
2019 (29)	0	2	6	0	0
2019 (30)	0	4	5	0	0
2020 (1)	0	0	2	0	0
2020 (2)	0	0	15	0	0
2020 (3)	1	8	11	0	1
2020 (4)	0	0	1	0	0
2020 (5)	0	8	5	0	0
2020 (6)	1	5	6	0	0
2020 (7)	0	2	0	0	0
2020 (8)	0	0	4	0	0
2020 (9)	0	0	0	0	0
2020 (10)	0	0	1	0	0
2020 (11)	0	0	3	0	0
2020 (12)	0	0	11	0	0
2020 (13)	0	4	0	0	1
2020 (14)	0	0	0	0	0
2020 (15)	0	0	0	0	0
2020 (16)	0	0	1	0	0
2020 (17)	0	2	1	0	0
2020 (18)	1	2	5	0	0
2020(19)	0	0	0	0	0
2020 (20)	0	1	1	0	0
2020 (21)	0	0	0	0	0
2020 (22)	0	0	1	0	0
2020 (23)	0	0	1	0	0
2020 (24)	0	5	1	0	0
2020 (25)	0	0	21	0	0

2020 (26)	0	10	0	0	1
2020 (27)	0	0	0	0	0
2020 (28)	0	1	2	0	0
2020 (29)	0	1	2	0	1
2020 (30)	0	2	9	1	0
2021 (1)	2	3	12	0	3
2021 (2)	1	5	25	0	0
2021 (3)	0	0	0	0	0
2021 (4)	0	0	5	0	0
2021 (5)	0	0	4	0	0
2021 (6)	1	1	11	0	1
2021 (7)	0	0	22	0	2
2021 (8)	0	1	14	0	0
2021 (9)	0	7	29	0	0
2021 (10)	0	1	8	0	0
2021 (11)	0	3	4	1	0
2021 (12)	0	1	13	0	0
2021 (13)	0	0	9	0	0
2021 (14)	1	1	8	0	0
2021 (15)	0	8	4	0	0
2021 (16)	0	0	3	0	0
2021 (17)	0	0	0	0	0
2021 (18)	0	0	2	0	0
2021 (19)	0	0	3	0	0
2021 (20)	0	0	2	0	0
2021 (21)	0	0	5	0	0
2021 (22)	0	4	4	0	1
2021 (23)	1	0	3	0	0
2021 (24)	0	1	6	0	0
2021 (25)	0	2	6	0	0
2021 (26)	0	0	1	0	0
2021 (27)	0	0	0	0	0
2021 (28)	0	1	3	0	0

2021 (29)	0	0	1	0	0
2021 (30)	0	4	7	0	0

Appendix 10 Figures 4.1 to 4.4., run charts based on anonymised and de-identifiable patient data critical care occupational therapy service, 2019-2021

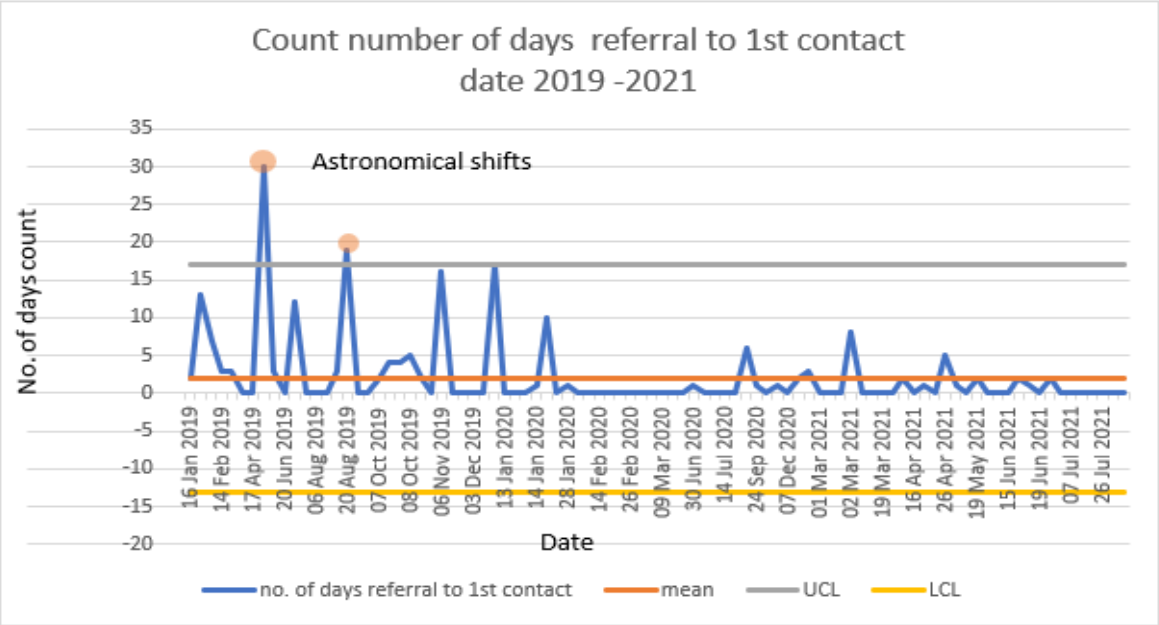

Figure 4.1 Run chart: number of days referral to 1st contact date 2019 -2021 in critical care occupational therapy services (LCL & UCL 3STDEV)

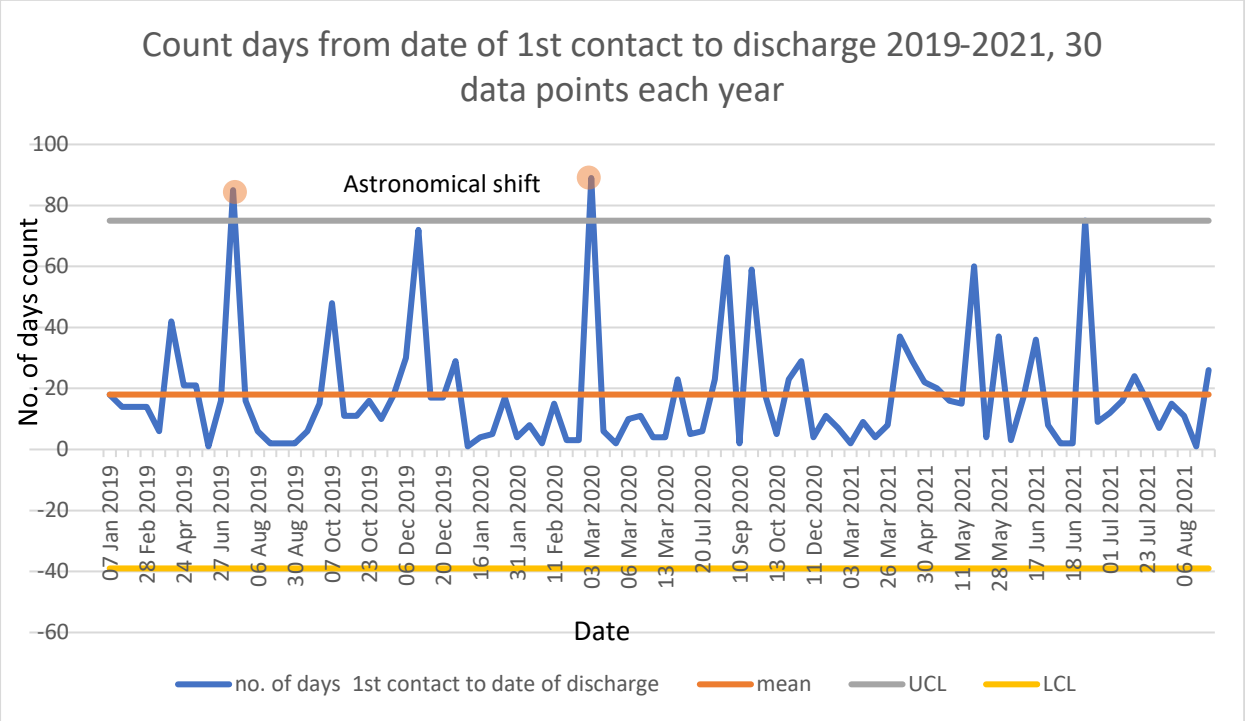

Figure 4.2 Runchart: number of days from date of 1st contact to discharge 2019-2021 in critical care occupational therapy services (LCL & UCL 3STDEV)

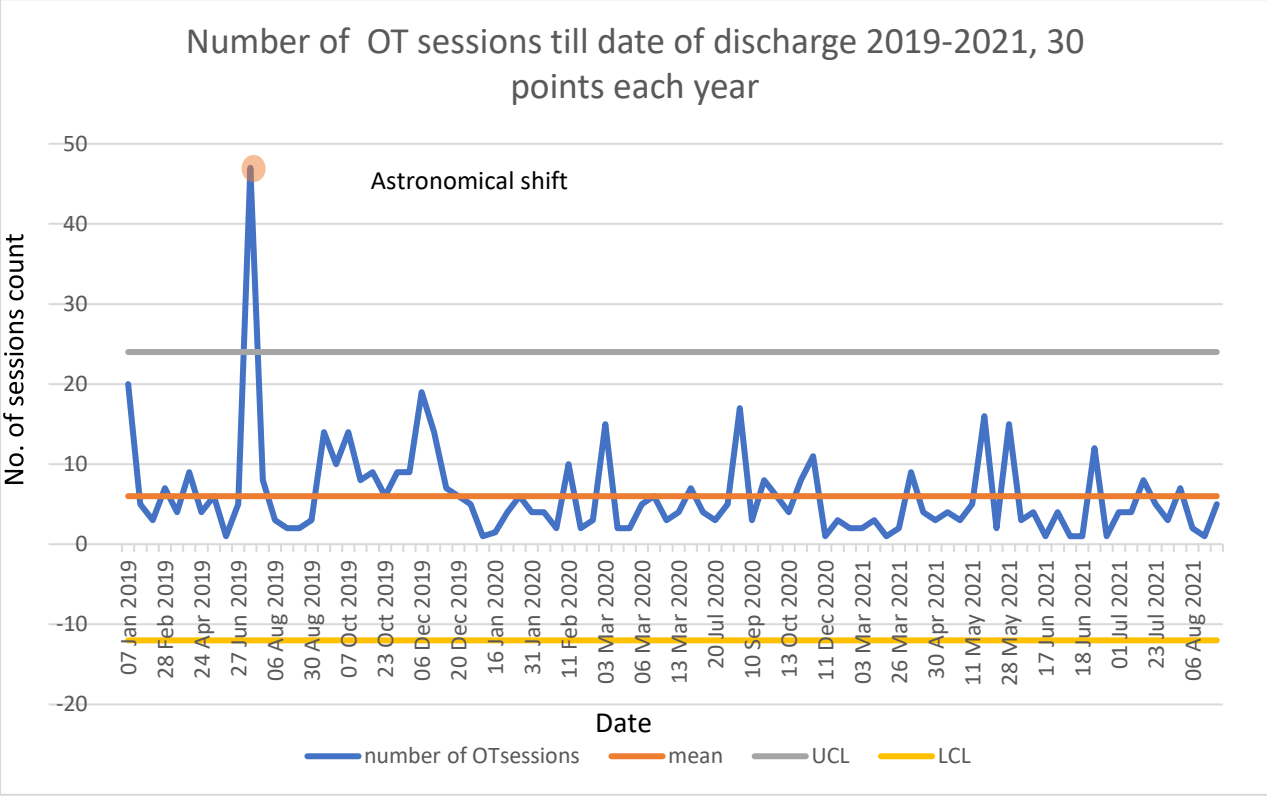

Figure 4.3 Runchart: Number of OT sessions till date of discharge 2019-2021 in critical care occupational therapy services (LCL & UCL 3STDEV)

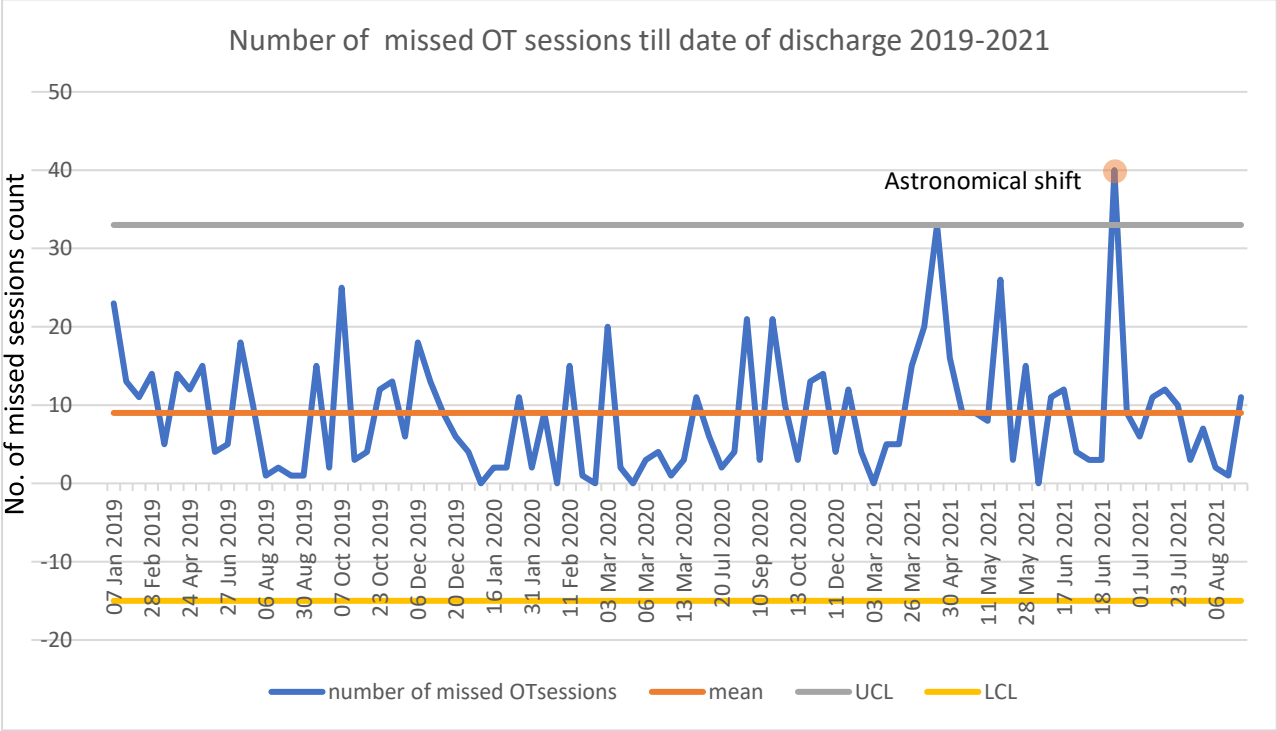

Figure 4.4. Runchart: Number of OT sessions till date of discharge 2019-2021 in critical care occupational therapy services (LCL & UCL 3STDEV)

Appendix 11 Table 4.3. Jan-Jul, 6-months data of critical care occupational therapy service's missed patient treatment sessions for years 2019 to 2021

Table 4.3 Six month's CCU OT service missed sessions for years 2019 to 2021

Year	Month	TOTAL Number of sessions missed monthly
2019	Jan	167
	Feb	120
	March	122

	April	154
	May	104
	Jun	49
2020	Jan	40
	Feb	53
	March	44
	April	0
	May	0
	Jun	0
2021	Jan	0
	Feb	0
	March	112
	April	116
	May	116
	Jun	96

Appendix 12 Table 4.4. Jan-Jul, 6-months data of critical care occupational therapy service staff's work days off sick for years 2019 to 2021

Table 4.4 CCU OT staff 6 months' off sick on work days, years 2019-2021

Month	2019	2020	2021
Jan	1	6	2
Feb	3	0	0
Mar	12	0	12
Apr	2	6	11
May	0	9	6
Jun	0	0	22

Appendix 13 Table 4.5. Multidimension Motivation at Work Scale (Gagné et al. 2015) for all critical occupational therapy staff before the start of the research process

Table 4.5 CCUOT staff scores for Multiple Motivation at Work Scale before implementation of research (total score is the average of each category section)

MMWS components	Ms Blue before	Ms Red before	Ms Green before	Ms Purple before
Amotivation	1	1	1	1
Am1	1	1	1	1
Am2	1	1	1	1
Am3	1	1	1	1
Extrinsic regulation - social	2	2	2.3	3
Ext-Soc1	2	3	3	5
Ext-Soc2	2	3	2	6
Ext-Soc3	2	3	2	4
Extrinsic regulation - material	1	2	1	1.7
Ext-Mat1	1	2	1	1
Ext-Mat2	1	2	1	2
Ext-Mat3	1	2	1	2
Introjected regulation	4.3	2.3	3.8	6
Introj1	4	3	5	6
Introj2	6	3	6	6
Introj3	3	1	2	6
Introj4	4	2	2	6
Identified regulation	3	5.7	3	

				3
Ident1	7	6	7	7
Ident2	7	6	7	7
Ident3	7	5	7	7
Intrinsic motivation	5.3	4.3	6	6.7
Intrins1	6	4	7	6
Intrins2	6	4	6	7
Intrins3	7	5	5	7

Appendix 14 Patient data from critical care occupational therapy, year 2022, 29 patients, table 4.6 .and 4.7.

Table 4.6. Twenty-nine patients from CCU OT service Jan to Jun 2022, with some information about their interventions

patient year & number	no. of Occupational Therapy sessions	no. of Occupational Therapy intervention hours	no. of sessions missed	no. of days referral to 1st contact
2022 (1)	3	2	7	0
2022 (2)	6	5	5	0
2022 (3)	17	19.4	20	0
2022 (4)	10	9.5	12	0
2022 (5)	8	11.75	2	5
2022 (6)	5	4	7	0
2022 (7)	7	6.3	7	0
2022 (8)	1	1	1	0
2022 (9)	3	3.5	9	0
2022 (10)	5	4	8	0
2022 (11)	9	8.5	16	0
2022 (12)	4	3	13	0

2022 (13)	6	6	26	1
2022 (14)	3	10	0	0
2022 (15)	5	3	12	0
2022 (16)	2	2	6	3
2022 (17)	11	17.3	9	0
2022 (18)	16	11.75	14	0
2022 (19)	12	13.6	9	0
2022 (20)	14	7	26	0
2022 (21)	5	4.5	15	0
2022 (22)	8	8	15	0
2022 (23)	3	2	6	0
2022 (24)	4	3	11	0
2022 (25)	4	3	18	0
2022 (26)	4	3	6	0
2022 (27)	6	5	11	0
2022 (28)	3	6.1	2	0
2022 (29)	6	9.1	3	0

Table 4.7. Twenty-nine patients from CCU OT service categorisation of their missed intervention sessions, Jan-Jun 2022

patient year & number	reason for missed session -A (Pt not ready)	reason for missed session -B (Pt unwell)	reason for missed session -C (Resources includes staffing)	reason for missed session -D (Declined)	reason for missed session -E (Pt could not tolerate)	reason for missed session -F (Not clinically indicated)
2022 (1)	0	1	1	0	0	5
2022 (2)	0	2	1	0	0	2
2022 (3)	0	0	20	0	0	0
2022 (4)	0	4	7	0	0	1
2022 (5)	1	0	0	0	0	1

2022 (6)	0	0	6	0	0	1
2022 (7)	0	0	4	0	0	4
2022 (8)	0	0	1	0	0	0
2022 (9)	0	0	8	0	0	1
2022 (10)	0	0	7	0	0	1
2022 (11)	0	2	10	0	0	3
2022 (12)	0	2	8	0	0	1
2022 (13)	0	11	9	0	0	6
2022 (14)	0	0	0	0	0	0
2022 (15)	0	4	3	0	0	5
2022 (16)	0	2	4	0	0	0
2022 (17)	0	1	6	0	0	2
2022 (18)	1	2	4	0	0	8
2022 (19)	0	0	1	0	0	8
2022 (20)	0	9	16	0	0	2
2022 (21)	1	1	10	1	0	2
2022 (22)	0	3	10	0	0	2
2022 (23)	0	2	3	0	0	0
2022 (24)	0	4	2	0	0	5
2022 (25)	0	0	17	0	0	1
2022 (26)	5	0	1	0	0	0
2022 (27)	0	0	11	0	0	0
2022 (28)	0	0	2	0	0	0
2022 (29)	0	0	2	0	0	1

Appendix 15 Six month's CCU OT service missed sessions for years 2019 to 2022, table 4.9

Table 4.9 Total of monthly missed sessions Jan to Jun from years 2019 to 2022 (grey highlighted areas at peak COVID19 strategies for hospital)

Jan Jun 2019 missed	Jan Jun 2020 missed	Jan Jun 2021 missed	Jan Jun 2022 missed
167	40	0	28

120	53	0	32
122	44	112	50
154	0	116	41
104	0	116	34
49	0	96	41
Total = 156	Total = 45	Total = 94	Total = 226
Mean = 26.0	Mean = 7.5	Mean = 15.7	Mean = 37.7

Appendix 16 ANOVA one way analysis of the missed sessions yearly groups, 2019 to 2022, for month Jan to Jun, table 4.10

An ANOVA one way statistical analysis was carried with the data from table 4.9, to identify if there were any significant differences between the means of the groups, see table 4.10. for the analysis outcomes.

Table 4.10 ANOVA one way analysis of the yearly groups, 2019 to 2022, for month Jan to Jun, regarding CCU OT staff missed patient sessions (data from table 4.9).

Source of Variation	*Sum of squares*	*df*	*Mean Square*	*F*	*P-value ≤0.05 significance*
Between groups	3068.791667	3	1022.930556	10.01809081	0.000306162
Within groups	2042.166667	20	102.1083333		
Total	5110.958333	23			

Appendix 17 ANOVA one way analysis of the yearly groups, 2019 to 2022, regarding CCU OT staff missed patient sessions, due to category C – resources (usually due to staff shortages), table 4.12

Table 4.12 ANOVA one way analysis of the yearly groups, 2019 to 2022, regarding CCU OT staff missed patient sessions (data from tables 4.2 and 4.7), due to category C – resources (usually due to staff shortages)

Source of Variation	*Sum of squares*	*Df*	*Mean Square*	*F*	*P-value ≤0.05 significance*
Between groups	214.3499	3	71.44995	2.230609	0.088393 (not significant)
Within groups	3683.633	115	32.03159		
Total	3897.983	23			

Appendix 18 ANOVA one way analysis of the yearly groups, 2019 to 2022, regarding CCU OT staff missed patient sessions, table 4.13.

Table 4.13. ANOVA one way analysis of the yearly groups, 2019 to 2022, regarding CCU OT staff missed patient sessions (data from tables 4.1. and 4.6.)

Source of Variation	*Sum of squares*	*Df*	*Mean Square*	*F*	*P-value ≤0.05 significance*
Between groups	414.368	3	138.123	4.603	.004
Within groups	3450.981	115	30.009		
Total	3865.349	118			

Appendix 19 Figures 4.7. to 4.10., run charts based on anonymised and de-identifiable patient data critical care occupational therapy service, 2022

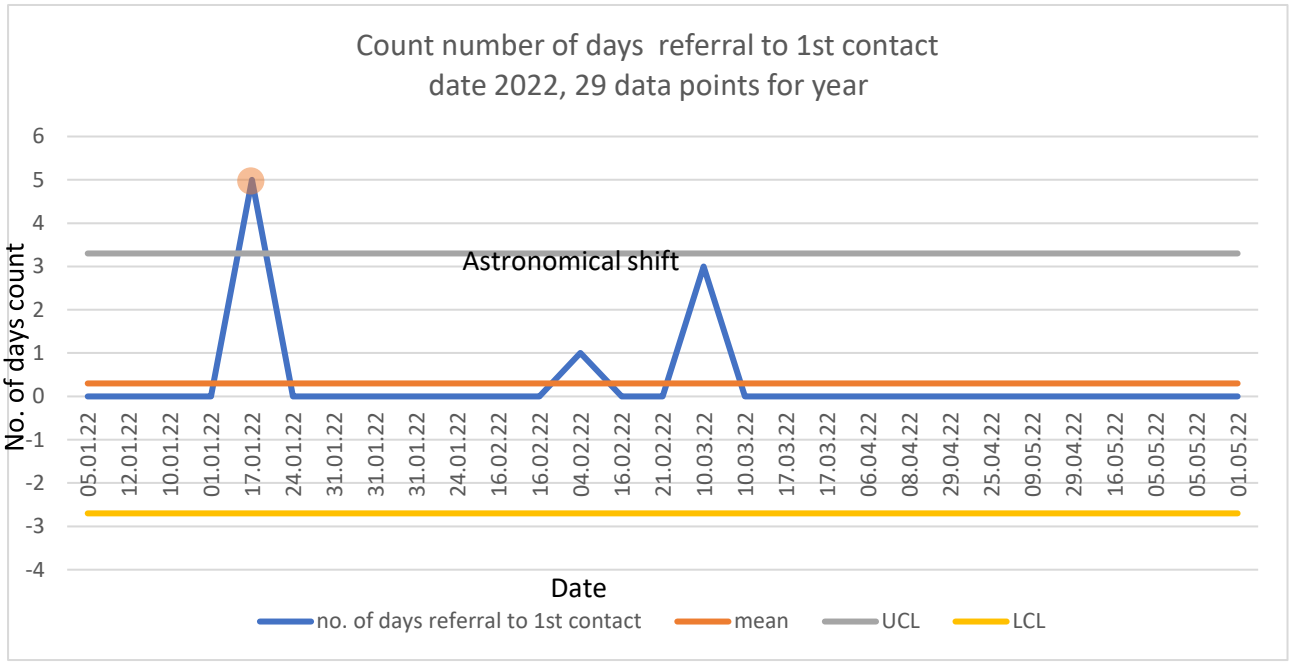

Figure 4.7. Runchart: number of days referral to 1st contact date 2022 in critical care (UCL and LCL 3 standard deviations)

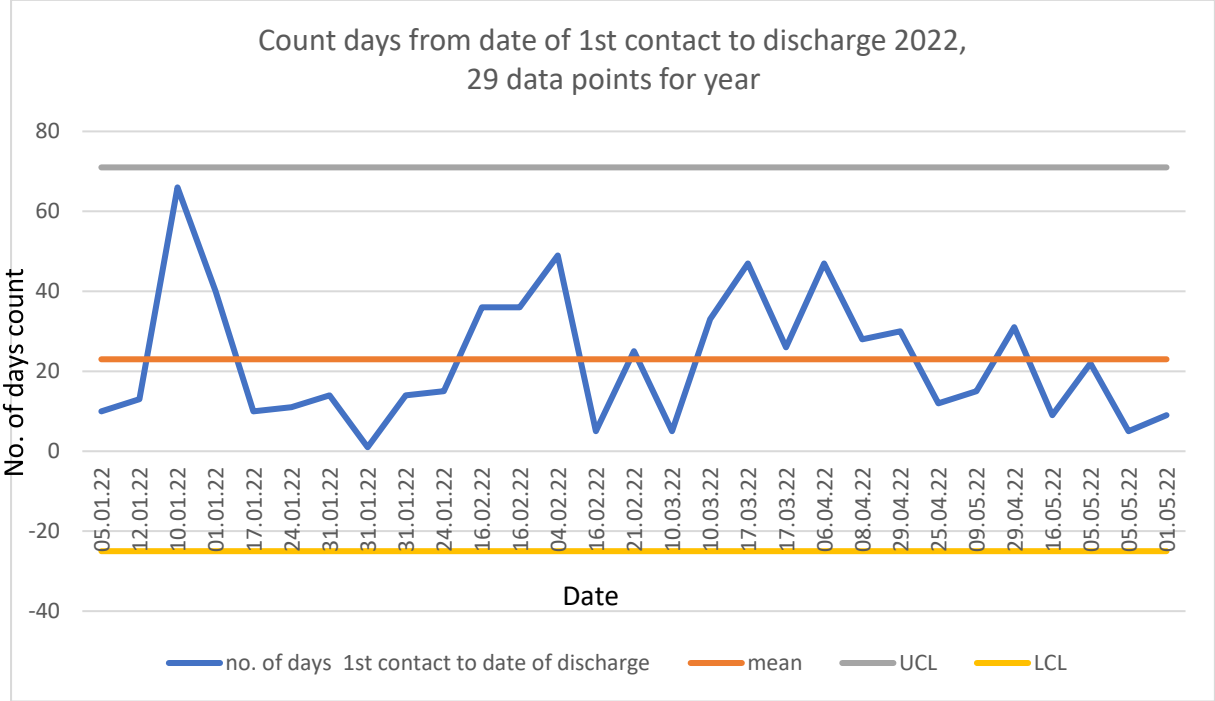

Figure 4.8. Count of days from date of 1st contact to discharge by critical occupational therapy service 2022 (UCL and LCL 3 standard deviations)

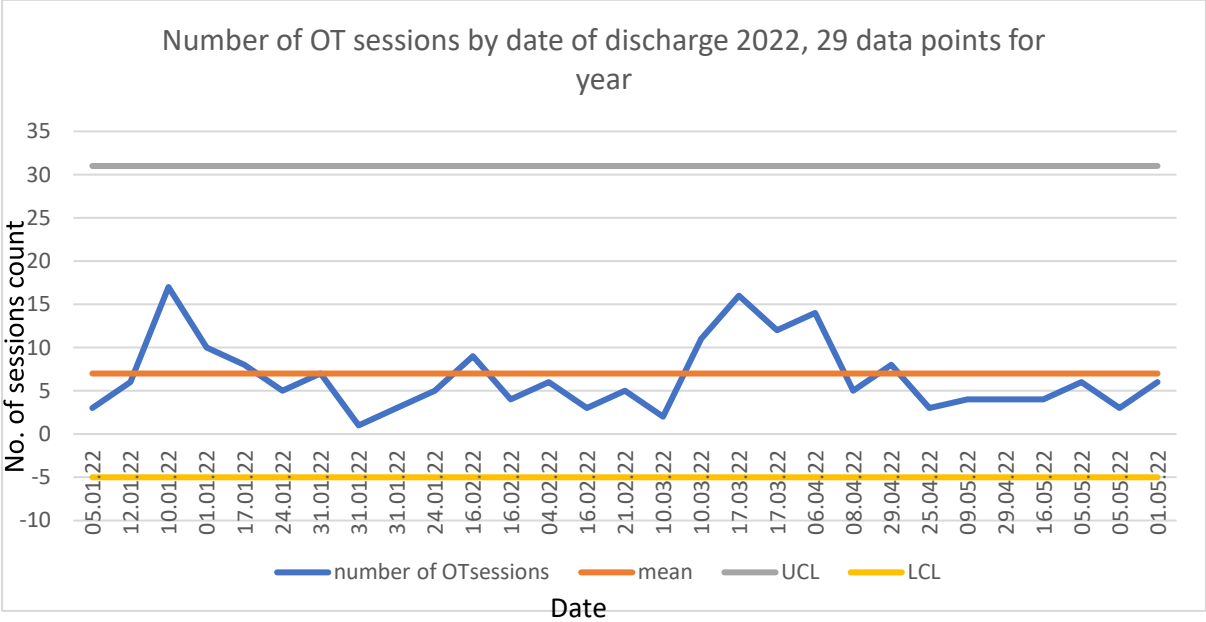

Figure 4.9. Runchart: number of OT sessions by date of discharge by critical occupational therapy service 2022 (UCL and LCL 3 standard deviations)

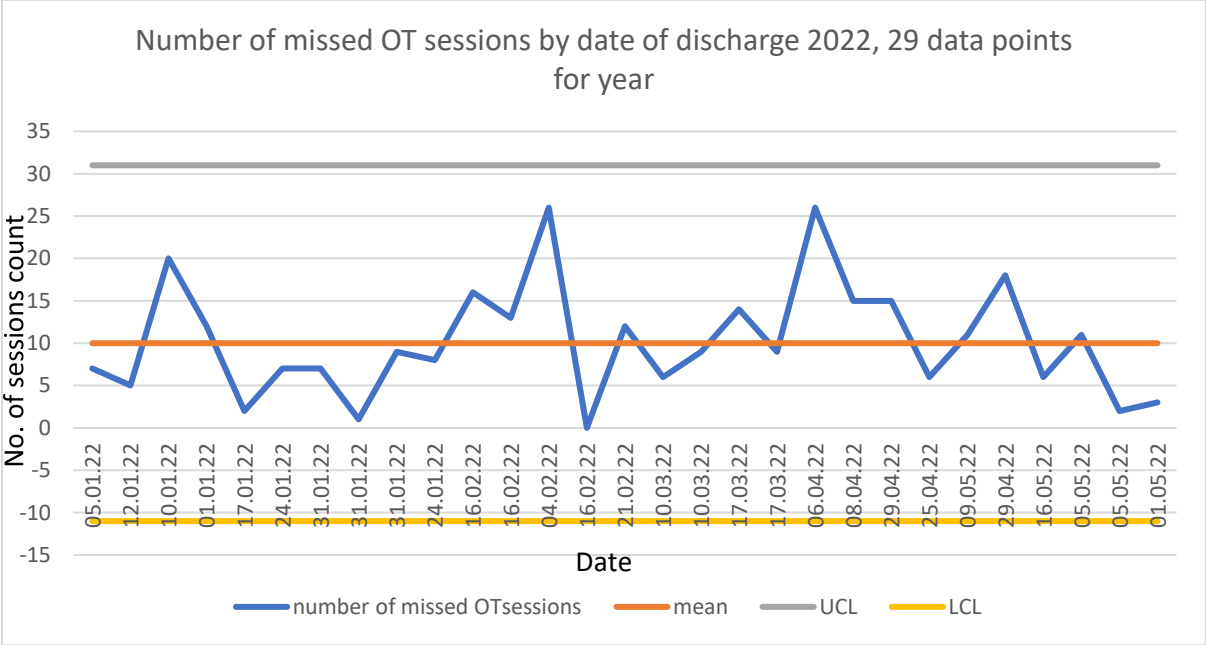

Figure 4.14. Runchart: number of missed OT sessions by date of discharge by critical occupational therapy service 2022 (UCL and LCL 3 standard deviations)

Appendix 20 Critical care occupational therapy staff sick days off work, 2022, for the months Jan to Jun table 4.15

Table 4.15. CCU OT staff 6 months' sick days off work, year 2022

	Jan-Jun 2022 CCU staff sickness data
Jan	2
Feb	0
Mar	11
Apr	0
May	1
Jun	5

Appendix 21 ANOVA one way analysis of the yearly sick days for year groups, 2019 to 2022, months Jan to Jun, for the critical care staff, table 4.16

Table 4.16. ANOVA one way analysis of the yearly sick dates, groups 2019 to 2022, months Jan to Jun, regarding CCU OT staff (data from tables 4.4. and 4.15.)

Source of Variation	*Sum of squares*	*df*	*Mean Square*	*F*	*P-value ≤0.05 significance*
Between groups	142.4583	3	47.48611	1.595725	0.221842 (not statistically significance)
Within groups	595.1667	20	29.75833		
Total	737.625	23			

Appendix 22 Count number of times 'occupational therapy' is stated by critical care occupational therapy staff from the evaluation meeting transcripts, before, during and after research implementation period., table 4.17

Table 4.17. Count of CCU OT stating 'occupational therapy' (denoted by 2) and 'OT' (denoted by1) from transcripts

pre implementation	during implementation	End of research
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	2
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OT x90 Occupational therapy x40	OT x17 Occupational therapy x4	OT x6 Occupational therapy x17
31% saying occupational therapy	19% saying occupational therapy	74% saying occupational therapy

Appendix 23 ANOVA one way analysis of data in table 4.17., table 4.18

The one way ANOVA analysis showed significance between the means of the groups (table 4.18., highlighted cell).

Table 4.18. ANOVA one way analysis of count of CCU OT staff stating occupational therapy vs OT from transcripts

Source of Variation	*Sum of squares*	*df*	*Mean Square*	*F*	*P-value ≤0.05 significance*
Between groups	4.250	2	2.125	10.274	.000
Within groups	35.365	171	.207		
Total	39.615	173			

Appendix 24 Average cost of overall hours of treatment delivered and missed session from CCU OT service per patient, table 4.21

Table 4.21 Average cost of overall hours of treatment delivered and missed session from CCU OT service per patient

YEAR	HOURS DELIVERED & MISSED	YEAR	HOURS DELIVERED & MISSED	YEAR	HOURS DELIVERED & MISSED	YEAR	HOURS DELIVERED & MISSED
2019	5	2020	4	2021	9	2022	3
2019	9	2020	10	2021	4	2022	6
2019	3	2020	17	2021	2	2022	17
2019	7	2020	3	2021	3	2022	10
2019	4	2020	11	2021	1	2022	8
2019	4	2020	8	2021	2	2022	5
2019	47	2020	3	2021	16	2022	7
2019	6	2020	5	2021	3	2022	1

2019	5	2020	1	2021	12	2022	3
2019	8	2020	1.5	2021	4	2022	5
2019	1	2020	4	2021	5	2022	9
2019	3	2020	6	2021	15	2022	4
2019	2	2020	4	2021	3	2022	6
2019	2	2020	2	2021	4	2022	3
2019	14	2020	3	2021	1	2022	5
2019	14	2020	2	2021	2	2022	2
2019	3	2020	5	2021	3	2022	11
2019	10	2020	7	2021	1	2022	16
2019	6	2020	2	2021	1	2022	12
2019	9	2020	6	2021	4	2022	14
2019	8	2020	2	2021	4	2022	5
2019	9	2020	3	2021	1	2022	8
2019	9	2020	4	2021	5	2022	3
2019	19	2020	4	2021	4	2022	4
2019	20	2020	8	2021	8	2022	4
2019	5	2020	6	2021	3	2022	4
2019	7	2020	4	2021	2	2022	6
2019	15	2020	2	2021	7	2022	3
2019	6	2020	1	2021	1	2022	6
2019	14	2020	3	2021	5	2022	7
2019	13	2020	2	2021	20	2022	5
2019	14	2020	15	2021	33	2022	20
2019	11	2020	21	2021	0	2022	12
2019	14	2020	3	2021	5	2022	2
2019	5	2020	14	2021	5	2022	7
2019	12	2020	13	2021	15	2022	7
2019	18	2020	2	2021	26	2022	1
2019	15	2020	4	2021	16	2022	9
2019	5	2020	0	2021	40	2022	8
2019	10	2020	2	2021	9	2022	16
2019	4	2020	2	2021	8	2022	13

2019	1	2020	11	2021	15	2022	26
2019	2	2020	9	2021	9	2022	0
2019	1	2020	0	2021	11	2022	12
2019	25	2020	0	2021	12	2022	6
2019	15	2020	1	2021	3	2022	9
2019	1	2020	3	2021	0	2022	14
2019	2	2020	11	2021	3	2022	9
2019	12	2020	2	2021	3	2022	26
2019	13	2020	4	2021	4	2022	15
2019	3	2020	0	2021	6	2022	15
2019	4	2020	1	2021	9	2022	6
2019	6	2020	3	2021	10	2022	11
2019	18	2020	6	2021	11	2022	18
2019	23	2020	21	2021	12	2022	6
2019	4	2020	10	2021	3	2022	11
2019	9	2020	3	2021	2	2022	2
2019	20	2020	4	2021	7	2022	3
2019	6	2020	4	2021	1		
2019	13	2020	12	2021	11		