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The evolving role of occupational therapists in adult critical care in England

A mixed methods design using role theory

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Abstract

Purpose – A recent paradigm-shift in patient care advocates for long-term recovery and quality of life in survivors of critical illness. Evidence suggests that occupational therapists in critical care can contribute to recovery in areas such as functional outcomes, length of stay and delirium, although poor role understanding can limit service-utilisation. The purpose of this study is to investigate current and future roles and practices of critical care occupational therapists in the UK.

Design/methodology/approach – Occupational therapists with clinical experience in adult critical care were invited to participate in a mixed-methods design using a locally developed online questionnaire and semi-structured interviews, concurrently. Descriptive statistics were generated through SPSS. Qualitative data were analysed using the framework approach.

Findings – Twelve occupational therapists participated in the survey element, with five continuing to interview. Occupational therapists described a multifaceted role in critical care where the majority reported practice in upper limb function, seating/positioning, cognition, psychosocial sequelae and discharge planning. Role and internal characteristics impacted on service delivery. It is envisaged that earlier intervention in a greater percentage of patients, a greater evidence-base, raising awareness and adequate staffing will be features for future development.

Originality/value – This study provides new insight into the current role and practices of adult critical care occupational therapists in England and generates insights into their role in addressing physical and non-



physical morbidity for this patient cohort. Findings are preliminary in nature; however, future research is warranted to evaluate the effectiveness of interventions.

Keywords Rehabilitation, Occupational therapy, Role theory, Critical care

Paper type Research paper

Introduction

Integrated rehabilitation has not traditionally played a role in the recovery pathway for survivors of critical illness, with only *ad hoc* rehabilitation commonly provided, usually by physiotherapists. A recent paradigm shift in patient care however now advocates for early intervention to address both physical and cognitive rehabilitation in critical care, including a “comprehensive clinical assessment for patients at risk of physical and non-physical morbidity” (NICE, 2009a). Non-physical morbidity can include impaired cognition (e.g. reduced processing speed/capacity, memory-loss, executive dysfunction), delirium and psychological distress which can often be as a result of critical care interventions such as sedation, sleep deprivation and alcohol/drug withdrawal. Critical care, also known as intensive care, is the management and monitoring of patients with life-threatening conditions (Intensive Care Society, 2009). A critical care unit is “a specially staffed and equipped, separate and self-contained area of a hospital dedicated to the management and monitoring of patients with life-threatening conditions”, providing “special expertise and the facilities for the support of vital functions and uses the skills of medical, nursing and other personnel experienced in the management of these problems” (Intensive Care Society, 2009).

Occupational therapy is a relatively new and evolving profession, having established its roots as a profession in the early 1900s (Friedland, 2003). It is defined as “a client-centred profession concerned with promoting health and well-being through occupation”, with the primary goal of enabling individuals to participate in activities of daily living (WFOT, 2013). In recent years, the potential and value of the occupational therapy role within critical care has been recognised (Faculty of Intensive Care Medicine and Intensive Care Society, 2019). There is limited evidence surrounding the impact of occupational therapy in adult critical care, however emerging evidence suggests input can result in reduced delirium (Álvarez *et al.*, 2017; Needham *et al.*, 2012; Schweickert *et al.*, 2009) greater functional outcomes (Álvarez *et al.*, 2017; Schweickert *et al.*, 2009) and reduced hospital length of stay (Needham *et al.*, 2012; Corcoran *et al.*, 2017). Increased volumes of rehabilitation in critical care have also been found to occur when led by an occupational therapist or physiotherapist, in comparison to other healthcare professionals e.g. nurses or physicians (Brummel *et al.*, 2014). In addition to functional benefits, occupational therapists can impact positively on economic outcomes where their role has been reported to contribute to:

- reduced length of stay on both critical care and general ward units (saving approximately £15 million annually);
- save in ongoing care and reduce disability;
- return to work at an earlier stage for both patients and carers due to reduced dependence; and
- reduce patient morbidity as a result of earlier rehabilitation (NICE, 2009b).

Despite promising outcomes, a lack of understanding of the occupational therapy role by the multidisciplinary team appears to impact on service delivery. In a Canadian cross-sectional study (Foreman, 2005), occupational therapists reported the challenge of receiving appropriate and timely referrals in critical care. More recently, the lack of awareness of the

occupational therapy role has been cited as a challenge when implementing new services in adult critical care in the United Kingdom (UK) (NICE, 2018). The lack of understanding of the occupational therapy role is not a new concept; it is often cited as a primary factor impacting negatively on therapists' job satisfaction (Shiri, 2006). Currently, there is limited definition of the role of occupational therapists in adult critical care in the UK. Wales is the only country to explicitly outline a number of role expectations for critical care occupational therapists in a document, *Quality Requirements for Adult Critical Care* (National Assembly for Wales, 2006) e.g. complete a comprehensive assessment of the patient's functional ability to inform short-term and long-term rehabilitation goals. Numerous authors (Orchard *et al.*, 2005; Henneman *et al.*, 1995) argue that for collaborative, patient-centred care to occur, the value of all health professionals needs to be recognised. Furthermore, the understanding of roles and effective communication has been cited as two core competencies in collaborative care (Suter *et al.*, 2009). Future research has been identified as required to clarify the role of occupational therapists in the critical care unit (Weinreich *et al.*, 2017). Role theory is a framework used by psychologists to describe how "in any given situation individuals are assigned and normally follow certain roles" (Jones, 1993) and can be used to analyse and explain professional roles. It examines the concepts of role definition, role signs, role ambiguity, role motivation, role competence and role stress. This study of critical care occupational therapists within England sought to explore their role by identifying:

- the role characteristics of an occupational therapist in the adult critical care unit;
- the facilitators and barriers that impact on the service delivery of occupational therapy in adult critical care; and
- the potential future role of occupational therapists in adult critical care.

Method

Study design

A mixed-methods design underpinned by role theory was undertaken within the UK. The design was concurrent in nature with both quantitative and qualitative data taking equal priority, as per Morgan's (1998) priority-sequence model. A mixed methods design was chosen to provide both a broad description of the critical care role across the UK as well as offer in-depth understanding via interviews (Johnson and Onwuegbuzie, 2004). Full ethical approval was sought and granted from City, University of London School of Health Sciences Research Ethics Committee (Reference MRes/16-17/11) on the 24 February 2017.

Participants

Purposive sampling, a type of non-probability sampling, was used in this study and applied to both questionnaires and interviews. It involves the conscious selection of participants with particular characteristics that are of interest to the researcher (Marshall, 1996). Occupational therapists with:

- part or full-time critical care experience in the acute hospital setting;
- access to an internet-enabled device, who were;
- willing to complete a questionnaire (and interview, if desired); and
- English-speaking, were eligible for study inclusion.

Participants were recruited by e-mail via the Critical Care Forum, under the Royal College of Occupational Therapists' Specialist Section Trauma and Orthopaedics (SSTO). The Critical

Care Forum was established in 2015 in response to growing numbers of occupational therapists working in critical care in the UK. The Forum had an estimated 15-20 critical care members in late 2016. Based on exploration, it was considered that recruitment via this forum was likely to provide access to the greatest number of potential participants. While it is recommended to recruit at least ten participants for theory-based interviews (Francis *et al.*, 2010), it was acknowledged that this figure would be unlikely given the niche cohort being researched.

Phase I: online questionnaire. An online questionnaire using Qualtrics© software (USA), was used to capture a broad role description of occupational therapists in critical care in the UK (Appendix). Questions posed in a cross-sectional study (Foreman, 2005) exploring the role in Canada, were modified and adapted in respect of temporal, geographical, and cultural contexts. Expert opinion was sought from two occupational therapists with critical care experience in the UK who piloted the questionnaires. Feedback was also provided to ensure relevance to the UK setting e.g. exploring sensory input as an intervention was included which had not been addressed in the Canadian context. Formatting was considered and amended, as per feedback, e.g. one respondent highlighted the desire to provide multiple choices. Experts were not included as participants. An organisational psychologist also provided feedback to ensure appropriate use of role theory. Questionnaires were divided into two sections; participant demographics, and exploration of the role via role theory. Participant demographics sought included geographical location, type of critical care unit with experience in, seniority level, number of years' experience as an occupational therapist in critical care, and how often they perceive patients are seen in critical care. Exploration of the role via role theory included topics such as role definition, role capabilities, role expectations, role motivation, role signs, role conflict, and the future of the role. Questionnaires were completed in a mean of 14 minutes, 35 seconds.

Phase II: semi-structured interview. Exploratory interviews were undertaken to gain a rich understanding of critical care occupational therapist's views of their current and potential future role, and the facilitators and barriers impacting on their service delivery. Interviews were carried out by telephone ($n = 4$) or face-to-face ($n = 1$) in a pre-booked room at City, University of London depending on participant preference and were conducted by the researcher who is an occupational therapist by background. Interviews lasted a mean of 45 minutes. The aim of the interview-guide was to have prepared, open and expansive questions that could facilitate the participant to talk at length and provide a detailed account of their experiences as a critical care occupational therapist (Smith *et al.*, 2009). All questions were framed under role theory. Interviews were piloted prior to data collection and determined any amendments to be made to interview-guide (Balls, 2009). Questions that guided one-to-one interviews included the following:

- How would you define your role as an occupational therapist who has worked on critical care?
- Can you describe to me a typical working day as an occupational therapist in critical care?
- What was your motivation for taking on the role in critical care?
- Have you ever felt that your role overlaps with another healthcare professional on critical care? If so, how?
- What stresses can occupational therapists face when working on critical care?
- In your opinion, what is the future of occupational therapy in adult critical care?

Procedure. Data were collected in March to May 2017. A recruitment e-mail was distributed to all 20 SSTO members, providing a brief study summary, inclusion/exclusion criteria, contact details of the investigator, and a link to the questionnaire. On accessing the link, details of the study were provided and progression to the questionnaire implied consent. Following completion of the questionnaire, respondents could choose to complete their participation at that point, or volunteer to participate in a semi-structured interview; in this case they were prompted to leave their contact details. Consent forms and a participant information sheet were then posted to interested participants with a self-addressed stamped envelope to send back to the researcher. Interviews were arranged at a time and location convenient to the participant. Interviews were audio-recorded and transcribed verbatim. An e-voucher incentive was issued via e-mail within 28 days following interview.

Data analysis

Demographic characteristics of the study population were summarised using the appropriate descriptive statistics (e.g. frequencies and percentages) with IBM SPSS Statistics for Windows, Version 23 (UK). The framework approach was used to analyse qualitative data from semi-structured interviews and is an increasingly popular method in the management and analysis of qualitative data in health research (Ritchie and Lewis, 2003). It is most commonly used in the thematic analysis of semi-structured interview transcripts (Gale *et al.*, 2013), identifying commonalities and differences in qualitative data, and seeking to draw descriptive and/or explanatory conclusions clustered around themes. A defining feature of Framework Analysis is its matrix output in the final stages of data analysis; a spreadsheet of rows (cases) which looks at each individual interview, columns (codes) and “cells” of summarised data which provide the researcher to systematically reduce the data in order to analyse by case and code.

The researcher read and re-read all interview transcripts to familiarise themselves with the data. Relevant sections of text were underlined, and content described using a label or code in the left-hand margin. More detailed memos were recorded in a right-hand margin. Once the five transcripts were coded, codes were examined and grouped together into categories using a tree diagram and then clearly defined, forming a working analytic framework. Inter-coder agreement was achieved by the researcher and co-investigator independently coding each transcript, which were then discussed to ensure consistency and enhance rigour. The working framework was then applied by indexing subsequent transcripts using existing codes. Once all data had been coded, the researcher summarised the data in a matrix for each category, where each row represented a participant and each column, a code. Finally, themes were drawn from the data set by reviewing the matrix and comparing and contrasting within and between participants and categories.

Results

Twelve occupational therapists with clinical experience in critical care participated in the study. One participant partially completed the questionnaire. Of these 12, a subset ($n = 5$) went on to complete an interview.

Participant demographics

The majority of respondents worked within Greater London in medical/general or surgical units (Table I) where the median occupational therapy service ($n = 9$) had been established in critical care for four years (IQR 2.0-7.5, range 1-15 years). Despite recruitment open throughout the UK, all participants worked within an English context. All occupational therapists in this study held at least a senior position, with a median of three years

Characteristic	Frequency
<i>Geographical location</i>	
Greater London	9(75%)
South East of England	2(17%)
South West of England	1(8%)
<i>Type of ICU settings</i>	
Medical/General	8(67%)
Surgical	8(67%)
Neurological	7(58%)
Trauma	6(50%)
Coronary Care/Cardiac	6(50%)
Burns	2(17%)
Other	1(8%)
<i>Banding* of OT</i>	
Band 6	5(42%)
Band 7	5(42%)
Band 8a	2(16%)
<i>Part/Full Time</i>	
Full-time	7(58%)
Part-time	5(42%)
Number of years practicing as OT	Median: Five years (IQR: 3-15, Range 2-20)
Number of years' experience in critical care	Median: Three years (IQR: 1-4, Range 0.5-12).

Notes: *Under the Agenda for Change pay system for NHS staff, pay rates are determined through the 'banding' of roles, where a pay rise is provided through an annual increment. Banding levels increase with seniority where junior occupational therapists in the NHS start off on a Band 5 pay scale, a senior occupational therapist holds a Band 6 position, a clinical specialist holds a Band 7, and managerial positions encompass greater or equal to Band 8a. OT: Occupational therapist

Table I.
Demographic
characteristics of
participants ($n = 12$)

experience working in critical care (IQR: 1-4, Range 0.5-12). Participants estimated that, in their experience, approximately forty-three percent of patients received occupational therapy input during their critical care admission, and were typically seen 4-6 times by an occupational therapist (55 per cent, $n = 6$) (Table II). Estimated staffing levels between 0.003 and 0.1875 working time equivalent occupational therapist per critical care bed were reported by participants.

Key themes and subthemes

Three key-themes emerged from data including role *characteristics*, *internal characteristics* and *building OT within critical care*; these were super-ordinate in nature and comprised a number of sub-themes (Figure 1).

Role characteristics

Occupational therapists evaluated and treated the physical, cognitive and psychosocial components of functional performance in order to promote, maintain or restore independence in activities of daily living, and quality of life. The majority of occupational therapists reported high frequency in addressing positioning, splinting, range of movement, tone and functional activity in particular to improve upper limb function, as well as seating and positioning, transfers, cognitive assessment, psychological sequelae, discharge-planning and educating family/patients (Figure 2; Table III). Cognitive assessment and

Table II.
Role characteristics
of participants
(*n* = 12)

Length of time occupational therapy service established (years)	Median: Four years (IQR 2.0-7.5, Range: one-fifteen years)
No. of beds covered	Mean: 28 (Range 8-76)
Change in referrals as role become established:	
Markedly more	4 (33%)
Somewhat more	7 (58%)
No change	1 (8%)
Majority referrals received from:	
Physiotherapists	9 (75%)
Daily screenings	2 (17%)
Blanket referral (Referral of all patients)	1 (8%)
Caseload of critical care patients per OT at any given time	
1-3	1 (9%)
4-6	7 (64%)
7-9	3 (27%)
Frequency of patients seen by OT in critical care	Mean: 43% (Range 5-100%)
Number of times patients seen by OT per week	
Once	2 (18%)
2-3 times	9 (82%)
Number of times a patient receives OT input during critical care admission	
1-3	1 (9%)
4-6	6 (55%)
7-9	1 (9%)
10-12	0 (0%)
>13	3 (27%)
Length of contact time per occupational therapy session	Median: 45 minutes (IQR: 40-52.5, Range 40-60)
OTs that share the caseload with other OTs	10 (82%)
Number of other OTs sharing critical care caseload	Median: One (IQR: 1-2, Range 0.5-8)
Time spent by part-time OTs on the unit	Mean: 11.7 hours (Range: 4-18.75)

treatment in particular was described as an area in which occupational therapists “can really take ownership of”, where they have been described as the “cognitive specialist”.

Occupational therapists spent a median 20 per cent of their working week completing non-clinical tasks (IQR: 20-30 per cent, Range: 10-70 per cent). Non-clinical tasks included attending multidisciplinary team meetings, documentation, education regarding care provision, report writing, contacting external agencies, receiving/providing supervision, attending/providing teaching, developing/completing audits, consulting organisational policy, and other.

All occupational therapists reported to commonly joint-work with other disciplines, with 73 per cent (*n* = 8) believing it to be “necessary” and a facilitator to service delivery. This was in line with interview participants who described joint working as “essential” and “really useful”. There are various reasons why joint working was favoured in critical care including completing joint-assessment, managing patient physicality, and enhancing the understanding of roles and communication among colleagues. In preparing to transition into the role, participants underlined the importance of completing acute rotations, neurological experience, shadowing, and achieving a range of competencies. Other desirable skills

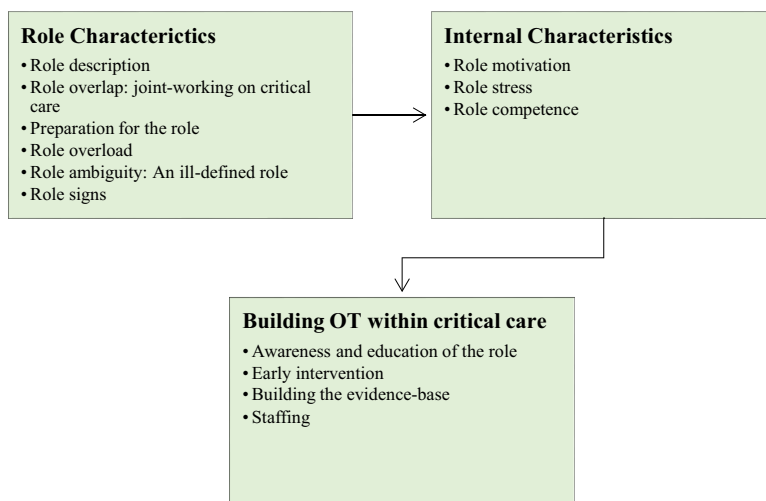


Figure 1.
Key-themes and sub-themes

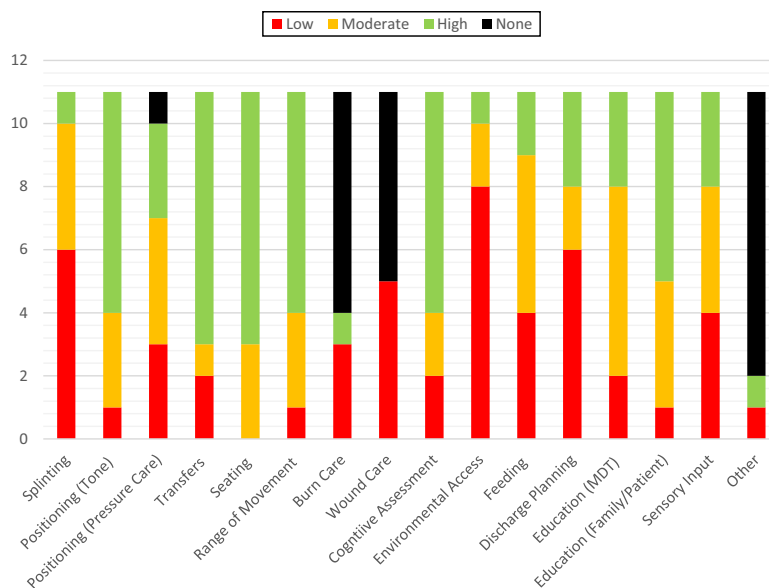


Figure 2.
Frequency of assessment and intervention

included “good manual handling skills”, managing “difficult conversations”, a “working knowledge of ventilation”, “risk assessment”, “seating”, and “positioning”. All participants expressed concern around inadequate staffing and the impact on patient care which can be viewed as a barrier in service delivery. Funding cuts and a transient staffing base, where staff frequently rotate within and out of the acute hospital, were identified as key contributors. All participants prioritised patient care, and typically de-prioritised non-clinical work, and personal time including lunch and unpaid overtime. Role signs such as

	Assessment	Treatment
Upper limb function	Level of tone/spasticity Range of Movement (ROM) Contractures Co-ordination Muscle mass Movement patterns	Splinting Positioning Stretching/ROM exercises Education Therapy tools e.g. Therabike, Theraputty, Therabands
Seating and positioning	Sitting balance Trunk control Endurance Head control Tone Cognitive functions Environment	Seating provision (inc. wheelchairs) Positioning guidelines Accessories to support position e.g. lateral supports or to enable function e.g. use of tray-table for feeding
Transfers	Cognition Visual-perception Trunk control Environment Upper limb strength	Task/Functional re-training Equipment provision
Cognition	Cognitive components Engagement levels Delirium Levels of responsiveness and awareness Assessments used include: Observation of functional activity The Montreal Cognitive Assessment The Oxford Cognitive Screen The Richmond Agitation-Sedation Scale The Confusion Assessment Method for the ICU The Wessex Head Injury Matrix Observation diaries	Functional re-training such as "self-care, feeding, grooming, transfers", where "emphasis is very much on functional stuff that we can do at the bedside" (P4) Cognitive apps via tablets Orientation boards
Psychological sequelae	Mood Anxiety	Stress-awareness Anxiety-management Breathlessness and fatigue- management
Discharge-planning	Risk assessment for potential discharge destinations	Appropriate onward referral e.g. "ongoing rehab, inpatient rehab, community rehab or if they're back to their functional baseline" (P4)
Other	Feeding Other activities of daily living	Eating programmes Environmental e.g. Adaptive cutlery, minimising distraction Focusing on impairment e.g. upper limb ROM Task re-training

Table III.
Areas of assessment
and treatment

uniform and assessment/intervention tools were identified as facilitators in identifying occupational therapists on the unit. All participants believed that the role is poorly defined. Lack of definition can lead to conflicting role expectations among colleagues, which inevitably leads to inappropriate referrals. Thirty-seven per cent ($n = 4$) of occupational therapists have been asked to carry out something that they felt was not in the scope of their role. In addressing role definition, participants were eager for a protocol to be developed in

the future to define the role. Other words used to describe a protocol included “strict role description”, “firm policies” and “guidelines”.

Internal characteristics

Internal characteristics of occupational therapists that influenced the role included role motivation, role stress and perceived role competence. Motivations for taking on the role included the potential for role development, improving patient outcomes, and developing own knowledge and skill-set. The majority of the respondents found the role stressful (64 per cent, $n = 7$), experiencing stress at least once a week, which can inhibit service delivery. This is in line with interview participants who used words such as “high-pressured”, “confronting” and “emotionally-taxing”. Contributing factors to emotional burden included managing distressed families, the critical nature of the patient’s condition, and expectations of the multi-disciplinary team. Participants offered some insight into what can help reduce or avoid role stress, including time-management skills, debriefing (informally, through supervision, or through occupational health facilities), and acceptance. Most occupational therapists reported a high level of perceived competence in transfers (100 per cent, $n = 11$), discharge planning (91 per cent, $n = 10$), range of movement (82 per cent, $n = 9$), cognitive assessment (82 per cent, $n = 9$) positioning for tone (73 per cent, $n = 8$), seating (64 per cent, $n = 7$), environmental access (55 per cent, $n = 6$), and feeding (55 per cent, $n = 6$). Low competence was perceived in areas including burn care (82 per cent, $n = 9$), wound care (64 per cent, $n = 7$), and splinting (27 per cent, $n = 3$). Interviews highlighted other areas of perceived low competence including the management of equipment, and spasticity management. While this can prevent optimal service outcomes, numerous continued professional development (CPD) opportunities were identified including teaching, opportunities via the Intensive Care Society and Critical Care Forum, networking, training, reading, and shadowing to overcome this barrier. Despite opportunities available, lack of time acts as a barrier in prioritising CPD, where teaching, in-service training, and presentations were de-prioritised.

Building OT within critical care

Every respondent believed that there is a future for occupational therapists in critical care. This is in line with interviews, where positive terminology was used to describe the future of the role including “*a brilliant future*”, and “*very strong*”. Factors identified that may influence the role’s evolution included awareness of the role, funding, increasing the evidence-base, and early input (Table IV).

Discussion

In this mixed methods study, the role and practices of occupational therapists in adult critical care in England were explored, as well as the barriers and facilitators that impact on service delivery, and the potential future of the role. Areas of assessment and treatment identified in this study were largely in line with the limited national role descriptions available (National Assembly for Wales, 2006), however additional insight into the breadth of service that occupational therapists provide in England has been gained. For example, the participants in this study discussed their role in delirium management, feeding programmes, and frequent input in arousal and awareness monitoring that has not been widely reported previously in critical care literature. The illumination of such areas adds to the breadth of occupational therapists’ role capabilities and highlights a role well positioned to address recommendations surrounding non-physical morbidities. Although care must be taken when comparing these results to the only other similar work (Foreman, 2005), which

Table IV.
Factors that may
influence the
development of
the role

Awareness and education of the role	<p>“A lot of education, just having an idea of what OT is..even knowing that OTs can work in critical care and here’s what they do” (P2)</p> <p>“I think we really need to market and network OT, to get involved in discussions.. I think physios are in there with discussions with intent and then when things are being set up.. so OT need to get good at getting there as well” (P3)</p> <p>“Having as much presence as I can.. I want to be seen more and have our OTs up on the unit as much as we can be” (P4)</p>
Building the evidence base	<p>“There’s a lack of evidence base for us to.. to say look this is the hard evidence and research as to what OT can do” (P3)</p> <p>“It’s tricky because [occupational therapy] is an act of so many things so it’s harder to isolate it” (P1)</p>
Early intervention	<p>“I think it would be better if we got in a bit earlier with rehab so people got deconditioned less and I would envisage that meant they would not have to stay in hospital as long after” (P1)</p> <p>“You would hope it would have a positive impact on their length of stay and hopefully gets them moving physically and cognitively quicker” (P3)</p>
Staffing	<p>“Everything comes down to the pound” (P5)</p>

stems from Canada and was conducted in 2005, it appears occupational therapists in England work more frequently in positioning for tone, transfers, range of movement exercises, and cognitive assessment, whereas Canadian practice appeared to place greater emphasis on splinting and environmental access. Occupational therapists in this current study were rarely involved in wound care, however at least 40 per cent of Canadian occupational therapists assisted in wound care assessment and intervention on a moderate-highly frequent basis. While skin integrity is something that may be considered during occupational therapy assessment e.g. seating and positioning, the management of wounds is typically led by nursing staff in England.

The majority of occupational therapists in this study reported confidence in addressing non-physical morbidities and can play a key role in responding to NICE guidelines (2009a) advocating for non-physical morbidity assessment and treatment in critical care. Non-physical morbidities are commonplace in patients during and following critical care admission. Between 20-80 per cent of survivors of critical illness have cognitive deficits (Pandharipande *et al.*, 2013; Ely *et al.*, 2001) and at least 20 per cent, clinically important psychological problems (Nikayin *et al.*, 2016; Rabiee *et al.*, 2016; Parker *et al.*, 2015). Family members have also been found to experience psychological distress, where up to 33 per cent experienced PTSD-related symptoms (Davidson *et al.*, 2012). There is contradictory evidence of the benefit of non-pharmacological interventions such as diaries (Ullman *et al.*, 2015) and music therapy (Wade *et al.*, 2016) in improving outcomes in these areas, but evidence is generally low level. Occupational therapists are in a strong position to intervene and support survivors of critical illness and their families and felt that they possessed the skills and confidence to do so.

Despite the promising potential for the role, occupational therapists in this study perceive that patients are not receiving the recommended levels of occupational therapy input in critical care as per national guidelines (Faculty of Intensive Care Medicine and Intensive Care Society, 2015; NICE, 2016) where patients are recommended a minimum of 45 minutes of each indicated therapy for a minimum of five days a week, at a level that enables the patient to meet rehabilitation goals. There are a number of possible contributing factors for this. Notably, occupational therapists estimated that not one unit in this study met the suggested ratio of 0.22 working time equivalent occupational therapist per critical care bed

(NICE, 2009a). Instead, varying estimated staffing levels between 0.003 and 0.1875 working time equivalent occupational therapist per bed were reported by participants. In addition to inadequate staffing, rapid expansion of units over recent years likely contributes to a staffing base that cannot keep up with the growing patient caseload. The number of critical care beds has steadily increased since 2000, following the Department of Health's review of critical care services (Department of Health, 2000). Furthermore, occupational therapy services may not yet be established in some critical care units, where many organisations are trialling pilot projects for the role with limited patient capacity. Insufficient staffing and intervention may prevent critical care patients at risk of morbidity from receiving a timely comprehensive clinical assessment, agreeing on short-term and medium-term rehabilitation goals, and engaging in early rehabilitation, as recommended by NICE (2009a). This may have physical, cognitive, psychological and economic implications. Other areas of acute practice with early occupational therapy input have been shown to have a positive impact both clinically and economically (RCOT, 2015; Barnett, 2015; Munin *et al.*, 1998; McCrone *et al.*, 2010).

Role ambiguity, where there is a lack of well-defined job responsibilities and expectations, can contribute to the role stress of occupational therapists in critical care. Other potential adverse effects of role ambiguity include lower health service performance and efficiency (Rovithis *et al.*, 2017), role strain, decreased professional performance and impaired organisational efficacy (Rizzo *et al.*, 1970; Lambert and Lambert, 2001), provoked insecurity, lack of confidence, irritation and even anger in the critical care role-set (Handy, 1993). How role ambiguity and role stress are managed may impact on the efficiency of the occupational service in critical care. The relationship between role ambiguity and role stress is not unexpected. Similar results were found in a Canadian cross-sectional study exploring the role of occupational therapists in adult critical care (Foreman, 2005). Both studies highlighted the challenge in receiving appropriate referrals and the lack of understanding by the multi-disciplinary team of the role of occupational therapists in critical care, provoking work-related stress. Role ambiguity within occupational therapy is not confined to critical care however. Issues around role blurring and boundary disputes are a long-standing concern for both the profession and the individual (Craik *et al.*, 1999).

Occupational therapists consider they have a promising future in the adult critical care unit; however, awareness and education has been highlighted as imperative in the development of the role. The ongoing promotion of occupational therapy is not confined to critical care. Raising the profile of occupational therapy has been an ongoing objective for both occupational therapists, and professional bodies (Tancock, 2014). In a critical care context, participants echoed the need for promotion of the role to critical care colleagues and other occupational therapists. Strategies to raise awareness suggested by participants of this study included teaching via in-service training, incorporating the role into rotations (where a clinical specialist remains static), inviting team members or students to shadow a session, and highlighting the role locally e.g. hospital website, newsletter, etc. At a national level, there is opportunity to raise the critical care profile through professional bodies e.g. RCOT. In response to the evolving role, the Critical Care Forum was set up in October 2015 under the Specialist Section Trauma and Orthopaedics, where a key aim is to "raise awareness of the role of occupational therapy within critical care". Other professional bodies such as the American Occupational Therapy Association raise awareness through their charity, *The Fund to Promote Awareness of Occupational Therapy* (2017), to both healthcare professionals and the lay-public surrounding the roles of occupational therapists. This type of promotion has also been carried out by other disciplines. For example, documents outlining the role of physiotherapy in critical care can be sourced freely via the

Chartered Society of Physiotherapy (CSP) website (CSP, 2011). The impact of such strategies on practice is not clear.

Awareness is not limited to healthcare professionals however, and can be extended to the consumer, i.e. patients and families. When radiologists in North America (Radiological Society of North America, 2012) faced similar challenges, print and electronic materials and social media were identified as marketing tools. Furthermore, role awareness through increased patient interaction was sought by changing the infrastructure of the role, providing more opportunities for patient contact. Occupational therapists already spend a median of 80 per cent of time completing face-to-face clinical tasks but could capitalise on this presence and the use of role signs to promote their role. For example, participants discussed a “visual display” of occupational therapy programmes (e.g. upper limb, positioning and seating) by the patient’s bedside that could act as a visual reminder of recommendations, but also as evidence and promotion of occupational therapy input.

Practice implications. The development of a protocol or role description should be prioritised to define the role of critical care occupational therapists and increase utilisation of an important resource. This may reduce role stress associated with poor understanding of the role, and role ambiguity. Additionally, in response to the marked emotional stress experienced by occupational therapists in critical care, staff welfare support mechanisms including debriefing, supervision and organisational counselling services should be promoted. In a landscape where non-clinical activities such as CPD are often de-prioritised, greater emphasis should be placed on protected time for staff to develop a range of pre-defined competencies. Finally, in the absence of sufficient evidence available, occupational therapists could consider highlighting their value locally through audit e.g. exploring length of stay, clinical outcomes.

Research implications. Further study on the effectiveness of occupational therapy on patient outcomes, as well as associated health economic evaluation, is required. Gold standard research methods such as randomised control trials may help determine whether occupational therapists impact significantly on patient outcomes e.g. short, medium, and long, term functional status. Testing interventions can be challenging however and requires well designed research methodologies as occupational therapy is considered a complex intervention as per Medical Research Council (2006) guidelines. Finally, there is a growing need for occupational therapists to demonstrate cost-effectiveness of their role. Occupational therapists should engage more strongly in health economic evaluations, e.g. exploring length of stay, long-term functional outcomes, and discharge destination, all of which have considerable economic implications.

Limitations. This study has several strengths including the mixed-methods design, and the use of role theory as a conceptual framework. Limitations also existed however. While all main themes had reached saturation, there were some minor additional points that were brought up during the last interview (e.g. how higher management perceive the value of occupational therapy, may impact on staffing – P5). Furthermore, all participants within this study worked in England. As a result, findings of this study may not be representative of critical care occupational therapists across the whole UK context which we originally set out to explore. As with the nature of evolving roles, it is expected that the numbers of occupational therapists in critical care will have increased since data collection. Despite this, results of this study prompt discussion around the role. Finally, data analysis may have been influenced by the researcher’s professional background as an acute medical occupational therapist. Member checking was one strategy that could have been

implemented, however themes and quotes were all independently reviewed by the co-investigator of the study, who is not an occupational therapist.

Conclusion

Occupational therapists who participated in this study described a multifaceted critical care role that is evolving, diverse and holistic in nature. Occupational therapists can play a key role in addressing NICE guidelines advocating for the comprehensive assessment and treatment of non-physical morbidities in critical care; however, current perceived resourcing does not meet national guidelines. Both role and internal characteristics facilitate and impede service delivery of occupational therapy in adult critical care. Findings of this study indicated a perceived relationship between role ambiguity and role stress, where lack of understanding of the role, conflicting role expectations and clinical experience contribute to work-related stress. Occupational therapists however appear to have a promising future in the critical care unit where key drivers in the roles' future evolution include raising awareness of the role, and building an evidence-base.

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Questionnaire

The evolving role of occupational therapy in adult critical care: A multi methods design using role theory

What geographical location do you work?

London East of England South East South West West Midlands
East Midlands Yorkshire and the Humber North West North East
Wales Scotland N.Ireland

What type of critical care unit do you have experience working in? (Tick all that apply)

Medical Surgical Neurological Trauma Cardiac Coronary Care General
Other (please specify)

In the most recent critical care unit that you've worked on, how many beds have there been ? (Specify number) _____

In the most recent critical care unit that you've worked on, how long has an OT service been established? (Years) _____

In your experience working in critical care (e.g. ICU), from whom have you typically received most referrals from? Doctor Physiotherapist Psychologist Nurse Other (please specify) _____

As the critical care role becomes more established, do you feel that you receive more or less referrals from other team members?

Markedly less Somewhat less No change Somewhat more Markedly More

Role definition

What banding level are you? 5 6 7 8a 8b 8c 8d 9 Other (please specify) _____

Is your experience in working full-time or part-time on critical care? Full Part

If part-time, how many hours a week have our typically worked in critical care? _____

Have you shared the caseload with any other OT? Yes No

If so, how many other OTs have worked alongside you? _____

In your experience in critical care, what percentage of patients on the critical care unit are seen by OT? _____

What has typically been your patient caseload average at any given point? 1-3 4-6 7-9 10-12 13+

How many times is a patient typically seen by OT during an admission? 1-3 4-6 7-9 9-11 12+

On average, how frequently are patients seen by OT? once only daily 2/3 x weekly weekly fortnightly other

On average, how much time is spent with a patient during intervention? (minutes) _____

In your experience, which of the following do you provide more of:

Direct treatment (e.g. assessment/intervention) Consultation (e.g. advising MDT or family re. positioning, splinting guidelines, seating)

Of the following assessments and/or interventions, please indicate the frequency in which you have carried out the following in critical care:

Assessment / Intervention	Frequency		
	Low frequency	Moderate frequency	High frequency
Splinting			
Positioning (tone)			
Positioning (pressure care)			
Transfers			
Seating			
Range of Motion			
Burn Care			
Wound Care			
Cognitive Assessment			
Environmental access			
Feeding			
Discharge planning			
Other (please specify)			

Thinking about non clinical face-to-face time with patients that you have had in the role: What percentage of the working day is non-clinical?

90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

What jobs do you complete in non-clinical time? (Tick all that apply)

- Telephone/email external services e.g. social services
- MDT Meetings
- Documentation of intervention/assessment
- Writing reports
- Attending training/teaching sessions
- Providing training/teaching sessions
- Educating family members/MDT/producing guidelines re. care provision
- Developing & carrying out audits
- Consulting organisational policy
- Providing supervision
- Receiving supervision
- Other (please specify) _____

Role capabilities

How long have you been practicing as an OT? (Years) _____

How long have you been practicing OT in critical care? _____

Of the following assessments and/or interventions, please indicate the level of competency in which you feel you have with the following:

Assessment / Intervention	Perceived competency		
	Low	Moderate	High
Splinting			
Positioning (tone)			
Positioning (pressure care)			
Transfers			
Seating			
Range of Motion			
Burn Care			
Wound Care			
Cognitive Assessment			
Environmental access			
Feeding			
Discharge planning			

Role expectations

In your experience:

Have your critical care job description(s) matched the work that you actually carry out on critical care? Yes No

Have MDT members ever expected anything of you that doesn't fit within your role? Yes No

Have you ever had the opportunity to determine your own role expectations (e.g. influence policy)? Yes No

Role motivation

Do you enjoy the occupational therapy role in critical care? Yes No

What motivated you to work in critical care?

The diversity of the role

I didn't choose it. I'm on a rotational post

It was the post that was available

Other

Role signs

Do you feel that an OT is easily identifiable on critical care? Yes No

Which of the following do you wear: OT uniform (green trousers and top) Scrubs

Other (please specify) _____

Role conflict

In your experience, is joint-working on critical care a common occurrence (e.g. with physiotherapy, nursing staff)? Yes No

Of the following professions, what is the frequency which you carry out joint-working?

Profession	Frequency of joint-working		
	Low	Moderate	High
Physiotherapy			
Speech&Language			
Dietician			
Psychology			
Doctors			
Nursing staff			

Do you feel this type of working is: Necessary Helpful Unhelpful Not necessary

In your experience, have you ever been asked by another MDT member to something that you felt was not within the scope of your role? Yes No

In your experience, do you feel the role is demanding/varied enough? Yes No

In your experience, do you feel that along with the face-to-face role clinically, that there is enough time to adequately meet all other roles? (e.g. supervision etc.) Yes No

Have you ever found the OT role in critical care stressful? Yes No

If so, how often have you felt stressed? Daily Weekly Monthly

What causes your stress? _____

The future of the role

Do you believe that there is a future for OT in critical care? Yes No

What do you think will have the most impact in the evolution of the role? Funding
MDT awareness of the role Evidence based practice OTs advocating for their role
Other (please specify) _____

Thank you for completing this questionnaire. Your input is greatly appreciated.

- (1) Would you be willing to take part in a semi-structured interview to explore further your role, and the barriers and facilitators you face in the critical care OT role?
Note: Interview can be conducted via telephone or face-to-face, depending on your preference. If you are willing to take part, please enter contact details below, and tick this box:

Tel: _____

And/or

Email: _____

- (2) Would you like to receive a copy of the summarized results? If so, please indicate preference of access, completing contact details below:

Postal address: _____

Email: _____