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The Role of Occupational Therapy in Adult Critical Care in Ohio

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Post-Professional Occupational Therapy Doctorate

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Taylor Stanford, OTR/L, is a doctoral student at Shawnee State University.

This study was approved under Expedited Review through the Shawnee State University Internal Review Board on April 15th, 2022; Protocol #2022-7.

There are no known conflicts of interest.

Funding was provided by Taylor Stanford, OTR/L. I would like to thank Dr. Mikel Stone, SSU IRB members, and the faculty at Shawnee State University for their guidance and assistance throughout my research journey.

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Abstract

Objective: The purpose of this study was to explore the barriers and supports in the delivery of OT services, identify current OT-specific protocols, and explore opinions on critical care certification and OT-specific ICU best practice guidelines.

Methods: A non-experimental descriptive data collection study with the use of an online survey. The secure survey link was embedded via email and sent to 10,000 Ohio occupational therapy practitioners. Inclusion criteria were licensed therapists (OTR and COTA) with past or current experience in adult critical care. The primary researcher developed survey questions focused on practitioners' perspectives and personal experiences with critical care onboarding training, delirium management, and protocols followed in a critical care setting.

Results: This study garnered 204 responses from Ohio OT practitioners with an active license. The majority of OT practitioners either "agree" (56.86%) or "strongly agree" (35.78%) that the ICU is considered a specialty setting. The majority of respondents either "strongly agreed" (65.20%) or "agreed" (31.86%) that OT-specific ICU best practice guidelines would be beneficial for new and existing OT practitioners. This study has helped identify key factors that influence the scope and proficiency development of practitioners working in an adult critical care setting.

Conclusion: Developing OT-specific best practice guidelines would benefit practitioners working in an adult critical care environment. Future research into critical care experience, onboarding training, understanding of delirium management, and OT-specific protocols would be beneficial to guide the development of best practice guidelines.

Keywords: Intensive care unit, critical care, occupational therapy, delirium, post-intensive care syndrome, ICU survivor, delirium management

The Role of Occupational Therapy in Adult Critical Care

Occupational therapy in adult critical care is not an emerging practice area, but it is an evolving one. Occupational therapy has been providing services in hospital-based settings for decades. Despite the profession's long history in hospital settings, critical care remains an area of practice in which there is little research for OT-specific interventions.

The Ohio Hospital Association (OHA) represents the interest of 252 hospitals and 15 health systems throughout Ohio. This includes 191 acute care hospitals, 23 long-term acute care settings, and 38 psychiatric, rehabilitation, and specialty surgical hospitals. Ohio hospitals have a significant economic impact on the communities they serve. The top ten employers in Ohio include hospitals or health systems. Additionally, these hospitals and health systems have brought in 91.7 billion dollars statewide. Hospitals employ over 251,200 Ohioans throughout the state, and an additional 272,000 jobs are indirectly supported by hospitals. Around 1.4 million patients were treated on an inpatient basis per 2021 data from the OHA (2022).

There is a shift within hospital culture to prepare patients to discharge to the home environment instead of relying on skilled nursing facilities as the next level of care (CMS, 2020). This shift is due to financial and medical factors. Levison (2014), the Inspector General from 2004 to 2019, reported that 22% of skilled nursing facility residents under Medicare services experienced adverse events throughout their admission, and 11% of residents experienced events that caused them temporary harm. Additionally, 59% of the adverse events and temporary harm events were found to be preventable by physician reviewers (Levison, 2014).

Patients that are discharged home instead of to a skilled nursing facility were shown to have lower total rates paid out by Medicare over the 60-day post-hospital period (Werner et al., 2019). Keswani et al. (2016) reported that adverse events were more prevalent in patients

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discharged to skilled nursing facilities than in patients discharged home. According to the Bureau of Labor Statistics (2022), 30% of occupational therapists work in a hospital-based environment, including state, local, and private hospitals. Only 7% work in skilled nursing facilities, and 8% work in home healthcare services (Bureau of Labor Statistics, 2022). As the shift to discharge patients home continues, hospital-based OT practitioners will be crucial to discharge planning.

Doiron et al. (2018) associated mobility and active exercise with early interventions for critically ill adults. There is ample research to support early mobility in a critical care setting (Azuh et al., 2016; Balas et al., 2014; Boehem et al., 2021). However, occupational therapy intervention can begin before early mobility using “early engagement” (Wilcox et al., 2021, p. 5). These interventions can be implemented before out-of-bed mobility takes place. In fact, occupational therapy can be instrumental in delirium management, which can be initiated at the beginning of ICU admission (Álvarez et al., 2017; Pozzi et al., 2020). Occupational therapists can initiate activities of daily living (ADLs), functional range of motion, polysensory stimulation, positioning, cognitive stimulation, and family participation at the bed level (Álvarez et al., 2017). Occupational therapists can initiate discharge planning through family education and training in the ICU (Pozzi et al., 2020).

The American Occupational Therapy Association (AOTA) has published best practice guidelines for conditions that may be observed in the critical care environment. These conditions include stroke (2015), neurodegenerative diseases (2017), musculoskeletal conditions (2017), and traumatic brain injury (2016). While these guidelines are beneficial, adult critical care best practice guidelines must transcend the medical condition and account for the environment in which services are delivered. Research to clarify the role of occupational therapy in critical care

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is imperative. Research to support OT-specific interventions within a critical care environment will help continue to validate the OT profession as part of the critical care team.

Problem Statement

The research on the role of OT in the ICU requires further examination to understand the impact of OT-specific interventions, ICU onboarding practices, and the current delivery and utilization of OT services in a critical care environment. The lack of best practice guidelines for ICU onboarding practices and delirium management have created inconsistencies in the delivery and representation of OT services within an adult critical care environment.

Purpose of Research Study

The purpose of this study was to explore the barriers and supports in the delivery of OT services, identify current OT-specific protocols, explore opinions on potential critical care certification, and to demonstrate the need for OT-specific ICU best practice guidelines for adult critical care.

Theoretical Framework

The physical factors of a critical care environment may consist of tangible objects such as the hospital bed, medical devices, room lighting, and noise. The environment may hinder or support participation in OT services. Due to the focus on the environment, the theoretical framework selected for this research project is the Person-Environment-Occupation (PEO) Model (Law et al., 1996). The PEO Model is an ecological model in which occupational performance supports the interaction between the three domains of person, environment, and occupation. The overlap between these domains is considered occupational performance, and this will fluctuate throughout one's lifetime based on each of the three factors, person,

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environment, and occupation. The environment domain includes social, cultural, and physical factors (Brown, 2019).

The PEO model is applicable within a hospital-based setting to help therapists understand how a patient's environment directly affects and impacts occupational performance (Maclean et al., 2012). The ICU is a physical factor within the environment domain that can hinder or facilitate occupational performance. For example, in an ICU setting, an adjustable hospital bed with bed rails may be used to facilitate bed mobility. These physical components (e.g., bed rails, bed controls) of the hospital bed may be used to achieve occupational performance during bed mobility. The patient may have a flat bed at home, and thus, the physical factor of a hospital bed will need to be graded during the hospital admission.

The PEO Model allows for lesser or greater congruence at the intersection of the three domains as the environment changes. Personal factors such as the patient's habits, psychological assets, life experiences, and education are also included in the personal domain. As a patient's health status changes within the ICU, these personal factors can guide the OT practitioner in creating changes in the environmental domain through adaptations to the environmental factors (e.g., light, sound, assistive technology, personal mobility devices, process and methods for acquiring education, and emotional support) (AOTA, 2020). The OTPF-4 stated that personal factors are the unique features of a person and are not considered a part of the individual's medical condition (AOTA, 2020, p. 52). Understanding the patient's personal factors help guide OT practitioners through client-centered adaptations that must be made to facilitate occupational performance in preferred occupations.

Significance

As a result of this research study, OT practitioners may have a clearer path toward understanding the role of OT within a critical care setting to the benefit of creating best practice guidelines. This research study gives an individualized focus on the OT profession, allowing for a clear representation apart from other critical care professions. This research study gives a voice to occupational therapists and occupational therapy assistants on their personal insights and perspectives working in a critical care environment. This feedback has the potential to benefit the OT curriculum for future students and best practice guidelines for current practitioners.

Summary

Exploring the role of OT in the ICU requires an understanding of how OT is impacted by the education and training practitioners receive, the hospital culture towards ICU care, the awareness and advocacy for the delivery of OT services, and an understanding of healthcare as a continuum. Further definition of the role of OT in critical care helps validate OT practitioners as effective members of the critical care team. Validation and evidence of effectiveness create opportunities for future research and development for the benefit of the OT profession, OT practitioners, patients, families, and the healthcare system.

Literature Review

The role of OT in the treatment of intensive care patients has yet to be thoroughly explored. More than five million adults are admitted annually to the ICU throughout the United States (Vranas et al., 2018). The most common reasons adults are admitted to the ICU include respiratory, cardiac, and neurologic conditions (Wunsch et al., 2011). Of these admissions, between 20% and 40% of these adults require mechanical ventilation (Wunsch et al., 2013). More than 50% of these ICU survivors will report at least one problem associated with post-intensive care syndrome (PICS) (American Thoracic Society, 2020). Patients in the ICU require specialized care for a variety of medical conditions. Cognitive, physical, and mental impairments can occur during and post an ICU admission. These impairments may result in a poorer quality of life (Rohr et al., 2021). Occupational therapists have the skillset and foundational knowledge to guide patients through the functional performance of activities of daily living (ADLs) and instrumental activities of daily living (IADLs). The outcomes of ADLs and IADLs are important for critically ill patients (Weinreich et al., 2017). Hopkins and colleagues (2017) discussed how ICU survivors reported dependency in IADL tasks due to deficits in memory and executive functioning needed for travel arrangements and financial management (p. 1334). The authors suggested performing an IADL assessment, such as the Lawton IADL instrument, to assess a patient's ability to function independently in a post-ICU setting (p. 1341).

The following themes emerged while researching the role of occupational therapy in the care of adult critical care patients: awareness and advocacy of OT, education and training of delirium management, the severity of illness, the culture of the hospital, and the continuity of care throughout admission and post-discharge. The role of OT in critical care is evolving and

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continuous. The exploration of each theme demonstrates the breadth of knowledge required to understand the role of OT in the ICU.

Awareness and Advocacy for Occupational Therapy

Exploring the role of OT in the care of ICU patients begins with awareness and advocacy for OT services. Understanding where OT services may fit within the critical care team is essential. Intensive care units may follow the ABCDEF bundle, which is “an evidence-based guide for clinicians to approach the organizational changes needed for optimizing ICU patient recovery and outcomes” (Marra et al., 2017, p. 1). It should be noted that emerging research may refer to the ABCDEF bundle as the “ICU Liberation Bundle (A–F)” (Wilcox et al., 2021, p. 3). The ABCDEF bundle includes “assess, prevent, and manage pain, both spontaneous awakening trials (SAT) and spontaneous breathing trials (SBT), choice of analgesia and sedation, delirium: assess, prevent, and manage, early mobility and exercise, and family engagement and empowerment” (Marra et al., 2017, p. 1).

The domains of OT include occupations, contexts, performance patterns, performance skills, and client factors (AOTA, 2020). The fourth edition of the Occupational Therapy Practice Framework (OTPF-4) included client factors such as mental functions, sensory functions, neuromusculoskeletal and movement-related functions, and environmental factors such as support and relationships as domains in which OT practitioners may assess, evaluate, and provide intervention. Considering the scope of practice as outlined within the OTPF-4, occupational therapy services are applicable in delirium management, early mobility and exercise, and family engagement and empowerment within the ABCDEF Bundle (AOTA, 2020).

The data on the benefits of early mobility is ample (Castro-Avila et al., 2015; Costigan, et al., 2019; Wafford et al., 2019). However, Wafford et al. (2019) reported that OT services are not

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being used to their maximum potential. The authors also reported that 42% of early mobility protocols do not include occupational therapy. Boehm et al. (2021) reported in their study that physical therapists and nurses were identified as the primary proponents of early mobility by members of the ICU team (p. 217). In the same study, only physical therapy practitioners identified occupational therapy practitioners as proponents of early mobility, along with experienced nursing staff (p. 217). Malcolm et al. (2021) reported that there is data to support OT services as proponents of early mobility, but the data is not as prevalent for other OT-focused interventions, such as self-care and health management of patients in the ICU.

Wilcox et al. (2021) used the term “early engagement” (p. 5) to describe initial treatment interventions for ICU patients. Wilcox et al. (2021) referred to early engagement as engagement in upright positioning, sitting edge of the bed, use of a communication board, use of guided imagery, participating in an ICU diary, self-care tasks, and coping strategies for anxiety. Early engagement may include activities and occupations at the bed level and can be a precursor to out-of-bed mobility. Participation beyond the bed level is typically referred to as early mobility. While critical care research into early mobility is evident (Castro-Avila et al., 2015; Costigan, et al., 2019; Wafford et al., 2019), this is not the primary area in which OT can demonstrate value. While the research on early engagement remains novel, there is growing support that this is where OT practitioners can make the most impact (Alvarez et al., 2017; Wilcox et al., 2021). However, the current research on the role of OT in critical care is limited in identifying specific OT interventions (Malcolm et al., 2021).

Costigan and colleagues (2019) echoed the vital need for original OT-specific research within the ICU setting. They reported that OT services were grouped with other professions in nearly 91% of the original studies within a scoping review. The scoping review also revealed a

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more prevalent focus on physical rehabilitation and mobility in the ICU. In a manuscript for the Department of Health and Human Services on the ABCDEF Bundle in Critical Care (Marra et al., 2017), occupational therapy is mentioned only once in combination with physical therapy under the early mobility section. Additionally, despite ample research (Alvarez et al., 2017; Dinglas et al., 2013; Morrow & Laxton, 2019), occupational therapy is not mentioned as an intervention for delirium or family engagement within the ABCDEF bundle.

Education and Training in Delirium Management

The awareness and advocacy of OT may be influenced by the education and training OT practitioners receive for delirium management. Delirium management is a crucial piece of the ABCDEF Bundle. Cavallazzi et al. (2012) reported that delirium might occur in 45%-87% of ICU patients; the range varies depending on the occurrence of mechanical ventilation. Leveille et al. (2021) stated that OT practitioners felt they did not have the skill set to assess and provide intervention for delirium due to factors such as a vague understanding of how to perform delirium assessments and interventions, diminished awareness of the value of OT services in delirium management, and OT not being listed within ICU delirium protocols.

OT is beneficial for non-ventilated patients within the ICU setting (Alvarez et al., 2017). Alvarez and colleagues reported that participation in OT could improve functional occupational performance and reduce the extent and frequency of delirium among elderly patients who did not experience mechanical ventilation. This is credited to patient engagement in ADLs, positioning, cognitive stimulation, upper extremity motor function stimulation, and family participation (Alvarez et al., 2017).

OT practitioners can address family engagement and empowerment as critical pieces of the ABCDEF Bundle. Family or caregiver involvement is significant in reducing the risk of

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delirium as reported by Bersaneti et al. (2021). Bersaneti and colleagues also reported that the occurrence of delirium dropped by 88% when a family member or friend was present throughout the hospitalization and by 95% when the patient engaged in mobility. This same study indicated that delirium was more prevalent in patients that required mechanical ventilation and sedation. Patients can engage in OT services to reduce the risk of delirium, even when requiring mechanical ventilation (Schweickert et al., 2009). Schweickert et al. (2009) reported less occurrence of delirium and less time on the ventilator in patients that engaged in physical and occupational therapy services within the first 72 hours of mechanical ventilation. OT practitioners can also educate families to advocate for delirium reduction strategies such as addressing sleep hygiene (e.g., request care is clustered at night), cognitive retraining (e.g., frequent reorientation), communication (e.g., encouraging modified communication strategies), environmental modification (e.g., natural light during the day), and poly-sensory stimulation (e.g., access to hearing aids and glasses, music to calm or to alert) (Morrow & Laxton, 2019).

Severity of Illness

Education and training for critically ill patients include understanding the severity of the patient's illness. It is essential to understand why mechanical ventilation is used and how it can affect the systems of the human body. When a patient requires mechanical ventilation, they require alternative means of nutrition (Prado et al., 2022). Prado et al. (2022) reported that the occurrence of malnutrition ranges from 38% and 78% in critically ill patients, which directly relates to poor clinical outcomes. The authors additionally stated that the inability to take in proper nutrition and muscle wasting during an ICU admission directly affects the mortality rate and long-term outcomes of critically ill patients. Nutrition must be considered an early and important intervention to assess and monitor. OT practitioners can facilitate proper nutritional

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intake by addressing the performance patterns, performance skills, occupations, activity demands, and client factors needed for self-feeding as supported by the OTPF-4 (AOTA, 2020). These skills include upright posture, sitting tolerance, fine and gross motor coordination, hand-eye coordination, and upper extremity range of motion to prepare for functional engagement, as well as self-feeding (AOTA, 2020) once mechanical ventilation is removed, and oral feeding is permitted.

Malcolm et al. (2021) reported that OT practitioners' perception of a patient's inability to participate functionally could influence the type of intervention utilized within the ICU. Passive range of motion is more likely to be used as an OT intervention for patients with a diminished level of consciousness, according to Malcolm et al. (2021). Malcolm and colleagues also suggested that education on OT interventions beyond that of passive range of motion would benefit all ICU team members.

Post-intensive care syndrome (PICS) symptoms may include post-traumatic stress disorder (PTSD) symptoms, such as hallucinations, bad dreams, and shortness of breath (Worsham et al., 2021). Additional symptoms include muscle weakness, balance problems, anxiety, depression, and decreased cognitive function (Davidson et al., 2013). PICS could impact the body, mind, emotions, and thought process (Davidson et al., 2013). In addition to the impact on the patient, PICS puts 30% of family members at risk for symptoms of anxiety, depression, and PTSD (Davidson et al., 2013). Davidson and colleagues recommend including family in patient care to reduce stress for all involved parties. Behavioral disorders, such as depression and anxiety, are correlated with prolonged mechanical ventilation and respiratory distress within the ICU (Worsham et al., 2021).

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The effects of PICS can last weeks, months, or years (Geense et al., 2021). Geense and colleagues stated that some ICU survivors might never return to their prior level of function and have reported a lower quality of life in ICU survivor's months to years' post-discharge. The authors reported that patients indicated deficits in their physical, mental, and social health. ICU survivors and their families often feel unprepared for the future because they were unaware of the prolonged effects of ICU admission (Geense et al., 2021, p. 39).

It is crucial to understand the severity of the illness that patients experience in the ICU to provide the best intervention possible. Patients who experience sepsis in the ICU are especially susceptible to poorer long-term outcomes (Schmidt et al., 2020). Schmidt and colleagues (2020) noted a mortality rate of 59% after six months, a 74% mortality rate after forty-eight months, and a 75% mortality rate four years after the onset of sepsis. Storgaard et al. (2013) reported similar findings, indicating that patients who survived thirty days after a sepsis diagnosis still had double the mortality risk over the next four years compared to persons with similar client factors and comorbidities.

Hospital Culture

The culture and resources of a hospital can change the delivery of occupational therapy services. Staffing, hospital type, method of ICU referral, and ICU onboarding practices can change the delivery of OT services as reported in a study of hospital-based OT practitioners (Rapolthy-Beck et al., 2022). Rapolthy-Beck and colleagues reported that staffing was the most significant barrier to delivering OT services in the ICU. Results indicated that no practitioners worked full-time hours in the ICU out of the forty-three respondents. Other barriers to delivering OT services included absent critical care guidelines on specific OT interventions, lack of ICU

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onboarding protocols, and limited research to support OT-specific intervention in a critical care setting (Rapolthy-Beck et al., 2022).

A study of 11 ICUs by Dinglas et al. (2013) reported that only 30% of patients received OT intervention throughout their ICU admission. Dinglas and colleagues reported that early OT intervention for patients in the ICU with an acute lung injury might have been delayed due to a lack of training and education on what constitutes a medical barrier to participation in therapy services in the ICU setting. The authors also state that the culture of early mobility in the ICU is not universally accepted. The delay of OT services in the ICU is linked to the type of ICU and the hospital culture toward rehabilitation (Dinglas et al., 2013).

Another aspect of the hospital culture that may change OT services is current sedation practices. Sedation while receiving mechanical ventilation can be beneficial for some patients to decrease agitation, anxiety, and pain (Grap et al., 2012, p. 2). However, Grap and colleagues (2012) also reported that high levels of sedation and prolonged sedation could increase the risk of delirium and depressive symptoms. Dinglas et al. (2013) reported that deep sedation could hinder the initiation of rehabilitation in the ICU. Dinglas and colleagues (2013) reported that reducing sedation is necessary to determine a patient's ability to participate in early rehabilitation (p. 358). Pohlman et al. (2010) findings supported engagement in physical and occupational therapy for mechanically intubated patients while being weaned off sedation. Pohlman and colleagues (2010) reported that patient participation in OT services from the onset of mechanical ventilation is not only possible but safe (p. 2094). In Pohlman and colleagues' (2010) study, they identified that most patients (83%) required no sedation to participate in therapy sessions while mechanically ventilated (p. 2092).

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The use of physical restraint practices should be carefully assessed (Bersaneti et al., 2022). Sedation and physical restraints can exacerbate delirium. Bersaneti et al. (2022) noted that the protocols for physical restraints should be evidence-based to promote safety and reduce the occurrence of delirium. This indicates that the hospital's culture, including sedation and restraint practices, can impact how OT services are delivered.

Participation in occupational therapy can be beneficial financially to hospital entities. Fisher and Friesema (2013) stated that OT could decrease hospital readmissions by maximizing reimbursement using functional assessments, best-care practice guidelines, and a multidisciplinary framework. OT services can be instrumental in reducing hospital-acquired conditions and the risk of falls by implementing early mobility programs. Likewise, OT services can reduce hospital readmission rates by setting appropriate goals and creating action plans to continue intervention for specific medical conditions upon discharge (Fisher & Friesema, 2013). The authors noted that OT practitioners are not always considered key personnel regarding Affordable Care Act initiatives, thus at risk of less reimbursement and less recognition for their contributions. The authors recommended that OT practitioners lobby to be members of their hospital fall prevention committee and boast about their ability to implement self-management techniques (Fisher & Friesema, 2013).

Rogers et al. (2017) reported in a Medical Care Research and Review study that OT was the only service category found to lower readmission rates for patients diagnosed with heart failure, pneumonia, and acute myocardial infarctions. Lower readmission rates save hospitals thousands of dollars. Rogers et al. (2017) reported that the hospital's quality of care could be improved through additional spending on OT services; this would not cause a substantial increase in the hospital's overall finances.

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Continuity of Care

The report of patients and their families feeling unprepared for long-term outcomes can result from diminished continuity of care. Rath et al. (2020) reported that unpreparedness might stem from families not being educated throughout the ICU process and not being given adequate information on the next level of care. Families may have perceived a lack of information due to diminished health literacy or stress in the ICU. According to De Grood et al. (2018), patients and family members believed that availability of staff, lack of role clarity, lack of consistency in how information was presented, and not being provided updated information were barriers to continuity of care. In the same study, facilitators of continuity of care included collaboration across multidisciplinary team members, follow-up care from the physicians, and establishing a good rapport between the provider and patient (De Grood et al., 2018).

Sharma et al. (2009) reported that poor continuity of care could lead to potentially unnecessary ICU admissions. Unnecessary ICU admissions can impact the ratio between ICU patients and critical care-trained physicians. Sharma et al. (2009) reported that critical care-trained physicians could only serve about 37% of ICU patients. It is suggested that there are insufficient critical care-trained physicians to meet the growing number of ICU patients. This imbalance will continue to grow unless continuity of care is addressed. Rohr et al. (2017) acknowledge the challenges in the continuity of care for ICU survivors due to their higher prevalence of multiple morbidities. These patients may have multiple providers that span a profusion of health conditions that can complicate provider follow-up. Rohr et al. (2017) indicated a need for follow-up services for survivors of the ICU.

Current Trends

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The American Occupational Therapy Association (AOTA) released a draft position paper on the role of OT in critical care in August of 2022. The release date of the final publication has not been released at the time of this literature review. The AOTA acknowledges that OT practitioners may be involved in early mobility, early engagement, and delirium management. The authors of the draft position paper list post-intensive care syndrome (PICS) as a significant concern in the care of critically ill patients. It is the position of the AOTA that rehabilitation in critical care should be initiated early for effective hospital outcomes and discharge planning (AOTA, 2022). It is the position of the AOTA that for practitioners to deliver care safely within an ICU setting, they must seek education and training through continuing education or mentorship (AOTA, 2022). The AOTA recommends that OT education include how PICS and the adult and pediatric critical care environments impact participation (AOTA, 2022). The 2018 Accreditation Council for Occupational Therapy Education (ACOTE) publication does not list specific requirements for the education of intensive or critical care-specific referrals, screenings, evaluations, and intervention plans.

The literature on the role of OT in the care of ICU patients is multifaceted. Prominent themes include awareness and advocacy of OT, education and training in delirium management, the severity of illness, the culture of the hospital, and the continuity of care. Therefore, this study examined the research question: what are the experiences, opinions, and understanding of the occupational therapy practitioners' role in adult critical care?

Methods

Research Design

The primary investigator selected an online survey as the instrument to collect data for this non-experimental descriptive study. This is a mixed-methods study with both quantitative and qualitative elements. Survey research relies on the self-report of five types of information: facts, knowledge, behavior, opinions, and personal characteristics (Carter & Lubinsky, 2016). Carter and Lubinsky (2016) reported on the benefits of online surveys, including time management, convenience for the respondents, widespread geographic coverage of specific populations who have access to the internet, and anonymity. Considering the information needed to address the research question and the timeline needed to complete the study, an online survey was selected as the appropriate data collection method.

Participants

The inclusion criteria for this study included: an active license in Ohio as an occupational therapist or occupational therapy assistant and past or current experience working in a critical care environment. Occupational therapy practitioners from the Ohio Occupational Therapy, Physical Therapy, and Athletic Therapy (OTPTAT) board were identified as the target sample. OT practitioners with an e-mail address listed through the OTPTAT board reflect the appropriate target population for this study design. This study was approved by the Shawnee State Institutional Review Board (IRB) on April 15th, 2021.

Instrument

The survey questions were developed by the primary investigator after conducting a needs assessment, literature review, and preliminary interviews with OT practitioners with critical care experience. The survey consisted of 15-questions using Likert scales and open-

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format items (see Appendix). The survey questions were developed to obtain data pertinent to the research question.

A description of the study, inclusion criteria, risks, benefits, and contact information were provided on the first page of the survey. The first question of the survey inquired about the consent to participate (see Figures 1 and 2). All individuals who selected “No, I do NOT consent to participate in this research” were disqualified from the study and not permitted to progress through the survey. The second question asked about past or current experience in adult critical care (see Figure 2). All individuals who selected “No experience in adult critical care” were disqualified from the study and not permitted to progress through the survey. All individuals who were disqualified were met with a message that thanked them for their time and provided contact information for any additional questions. Participants who met the mandatory consent and critical care experience questions were permitted to progress through the survey. Each question required an answer before moving on to the next question, thus, no participants were permitted to skip questions.

Questions 3, 4, and 5 (see Figure 2) provided demographic information such as licensure information and years of experience. The next three questions, 6, 7, and 8 (see Figure 3), inquired about the ICU onboarding experience, satisfaction with the ICU onboarding experience, and OT-specific ICU protocols and processes. Questions 9 and 10 (see Figure 4) inquired about delirium management and assessments. Questions 11, 12, 13, 14, and 15 (see Figures 4 and 5) were developed for the data collection on the respondents’ knowledge and opinions of diagnoses commonly observed in the ICU, relationships with other critical care team members, and the need for critical care best-practice guidelines. Questions 6, 8, 9, 10, 13, and 14 were presented in a Likert scale as well as an open-format item to allow respondents to expand on their responses.

Procedures

The primary researcher performed a pilot survey that was sent to occupational therapy practitioners who would not be participating in the final survey. Revisions were made based on pilot feedback to ensure the survey was void of grammatical errors and spelling errors. Revisions were also made to maximize readability and ensure functionality across various electronic media (e.g., cell phone access and computer access). After all the revisions were made, the survey was finalized and sent out via e-mail invitations.

A paid Individual Advantage Plan Survey Monkey subscription was purchased by the primary researcher. The Individual Advantage Plan enables IP blocking and anonymous responses (<https://www.surveymonkey.com>). Only the primary researcher had access to the Survey Monkey account. The list of e-mail addresses from the Ohio Occupational Therapy, Physical Therapy, and Athletic Therapy (OTPTAT) licensure board was made available upon request by this researcher for the purposes of research. The e-mail list is not publicly available. The e-mail list was stored in an Excel document on a password protected computer which was only accessed by the primary investigator. The e-mail list was deleted at the completion of the study.

The survey was sent as a secure link, embedded in an e-mail that was sent to 6,958 occupational therapists and 3,042 occupational therapy assistants in Ohio. Survey Monkey allows up to 10,000 respondents in any one survey. All 6,958 occupational therapists with an e-mail address listed through the OTPTAT Board were invited to participate. The first 3,042 occupational therapy assistants (alphabetical order) out of a possible 5,097 were also invited to participate in this study. The primary researcher was unable to invite the remainder of the occupational therapy assistants due to the 10,000 limit set by Survey Monkey. Occupational

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therapists were selected to make up more of the target sample due to survey questions about assessments.

The survey launched on June 14th, 2022, and initially garnered 91 responses. Between June 15th, 2022, and June 26th, 2022, an additional 43 responses were collected. One reminder e-mail was sent on June 27th, 2022, in which 61 additional responses were collected. An additional 9 responses were collected before the close of the survey on July 1st, 2022. The survey was open for 18 days. A total of 347 participants accessed the survey with 257 consenting to participate. There were 53 respondents that were excluded from the survey as they did not meet the inclusion criteria. Once the survey closed and all data was collected, 204 respondents were found to meet the inclusion criteria and included in the final data analysis. This included 179 OT practitioners and 25 occupational therapy assistants.

Data Analysis

The data was collected using a paid Individual Advantage plan through Survey Monkey. All qualitative data from the open-ended items underwent visual analysis by the author to determine themes and contrasts. Due to the low number of respondents that offered additional comments, visual analysis was the most appropriate approach for this study. Responses were carefully examined to gain insight into the current understanding, experience, and opinions of occupational therapy practitioners' role in adult critical care.

Results

Participants' Demographics and Experience

This survey was accessed by 347 occupational therapy practitioners across the state of Ohio, with full completion by 204 respondents who met all the criteria. The gender and age range of participants is unknown. Table 1 details the demographics and clinical experience of the

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participants. There were 179 occupational therapists (87.75% of participants) and 25 occupational therapy assistants (12.25% of participants). Over half of all participants (55.88%) indicated current ICU experience. The majority of occupational therapists (30.17%) had over 21 years of clinical experience. The majority of occupational therapy assistants (40.00%) had six to ten years of clinical experience. Overall, this study indicated that the majority of participating OT practitioners (29.41%) have over 21 years of clinical experience. When asked about years of critical care experience, the majority (49.51%) reported one to five years of experience.

Table 1

Participant demographics and experience (N=204)

	Occupational Therapists	Occupational Therapy Assistants	Total
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Participant licensure	179 (87.75%)	25 (12.25%)	204 (100%)
Years of experience in occupational therapy			
1 to 5 years	47 (26.26%)	1 (4.00%)	48 (23.53%)
6 to 10 years	41 (22.91%)	10 (40.00%)	51 (25.00%)
11 to 20 years	37 (20.67%)	8 (32.00%)	45 (22.06%)
+21 years	54 (30.17%)	6 (24.00%)	60 (29.41%)
Years of experience in adult critical care			
<1 year	18 (10.06%)	4 (16.00%)	22 (10.78%)
1 to 5 years	90 (50.28%)	11 (44.00%)	101 (49.51%)
6 to 10 years	33 (18.44%)	9 (36.00%)	42 (20.59%)

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11 to 15 years	18 (10.06%)	0 (0.00%)	18 (8.82%)
16 to 20 years	11 (6.15%)	0 (0%)	11 (5.39%)
+21 years	9 (5.03%)	1 (4.00%)	10 (4.90%)
Current experience in an adult ICU	103 (57.54%)	11 (44.00%)	114 (55.88%)
Past experience in an adult ICU	76 (42.46%)	14 (56.00%)	90 (44.12%)

Note. Data in this table was collected from questions 2, 3, 4, & 5 (see Figure 2).

Onboarding Training

Occupational therapy practitioners were asked to select the type(s) of ICU onboarding training they received and their level of satisfaction with the training. Tables 2 and 3 provide data on onboarding training. Over 80.00% of total respondents reported observation as the most prevalent type of training. A little over 15.00% of total respondents reported they had no formal training at all to prepare them for work in the ICU. The majority of all total respondents (58.82%) reported being “satisfied” with their ICU onboarding training.

Table 3 accounted for data in question 7 (see Figure 3) which offered an open-ended response option. There were 18 comments analyzed by the primary researcher to assess for similarities and contrasts. Four respondents indicated that their primary training occurred as a student as part of their clinical rotation. Six respondents indicated that they were self-taught, using continuing education courses (CEU) as guidance. Two of those respondents also indicated they established an ICU early mobility program and now provide additional training to new and existing OTs at their current work site. One respondent indicated they were involved with their site’s early mobility committee. Three respondents reported engaging in peer relationships and mentorship with physicians, respiratory therapists (RT), and registered nurses (RN). Another

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respondent indicated that the bulk of their onboarding training came from co-treatments with physical therapists (PT). One respondent reported that their site was in the process of a pilot mobility and mentorship program. One respondent indicated they did not remember their ICU onboarding experience.

Table 2

Onboarding training Satisfaction (N=204)

	Occupational Therapist	Occupational Therapy Assistants	Total
Satisfaction with quality of training received to prepare for working in the ICU	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Very satisfied	28 (15.64%)	4 (16.00%)	32 (15.69%)
Satisfied	106 (59.22%)	14 (56.00%)	120 (58.82%)
Dissatisfied	39 (21.79%)	5 (20.00%)	44 (21.57%)
Very dissatisfied	6 (3.35%)	2 (8.00%)	8 (3.92%)

Note. Data from this table was collected from question 7 (see Figure 3).

Table 3

Onboarding training (N=204)

	Occupational Therapist	Occupational Therapy Assistants	Total
Type of training received	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Facility facilitated mentorship	109 (60.89%)	11 (44.00%)	120 (58.82%)
Skills check off	109 (60.89%)	16 (64.00%)	125 (61.27%)
Manual/protocol/guid eline review	90 (50.28%)	10 (40.00%)	100 (49.02%)

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Online modules (e.g., HealthStream)	65 (36.31%)	12 (48.00%)	77 (37.75%)
Observation	146 (81.56%)	21 (84.00%)	167 (81.86%)
No formal training	27 (15.08%)	4 (16.00%)	31 (15.20%)
Other/Comments			18 comments

Note. Data from this table was collected from question 6. Respondents were permitted to select all that apply (see Figure 3).

OT-specific Protocols and Interventions

The information in Table 4 refers to the OT-specific ICU protocols and guidelines that may be present within the respective hospitals of each participant. A total of 126 participants (61.76%) reported a lack of OT-specific protocols or guidelines at their site. There were 54 participants (26.47%) who reported that there were OT-specific protocols and guidelines at their sites. Participants were permitted to submit a comment on the specific protocols if applicable.

There were 15 comments submitted by respondents. One respondent indicated they were not informed of any guidelines, but this may have been because they were hired as pro re nata (PRN) or “as needed.” This respondent indicated that the full-time staff might have been informed of any potential guidelines. One respondent reported their critical care experience was in the early 80s and thus no protocols were available at that time. One respondent indicated that their site has guidelines specific to splinting. Three respondents reported that OT-specific protocols were in the development phase, and one of these respondents specified that the focus was on delirium management. Five respondents reported that their site has diagnosis-driven protocols, such as cardiac-specific guidelines.

Table 4*OT-specific ICU protocols/guidelines (N=204)*

	Occupational Therapists	Occupational Therapy Assistants	Total
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
No	113 (63.13%)	13 (52%.00)	126 (61.76%)
Yes	44 (24.58%)	10 (40.00%)	54 (26.47%)
N/A	8 (4.47%)	1 (4.00%)	9 (4.41%)
Other/Comments			15 comments

Note. Data from this table was collected from question 8. Participants were permitted to select “other/comments” and type in a response (see Figure 3).

Delirium Management

OT practitioners were asked if their current or past site used the following delirium assessments: Richmond Agitation and Sedation Scale (RASS), Confusion Assessment Method for the ICU (CAM-ICU), Confusion Assessment Method-Severity (CAM-S), The 4 ‘A’s Test (4AT), Intensive Care Delirium Screening Checklist (ICDSC), and Orientation Log (O-Log). They were also asked if they actively participated in the assessment of delirium. Refer to Tables 5 and 6 for details on data. The majority of occupational therapists (48.05%) reported that the RASS was the most prevalent delirium assessment at their site; however, only 12.85% of respondents reported that they actively participated in the assessment. The CAM-ICU was the second most prevalent assessment (34.08%) reported; however, only 17.65% of respondents reported being actively involved in the assessment.

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When asked what delirium assessments are utilized at the respondents' facility, 11 participants left an optional comment. Three respondents indicated they could not recall any delirium assessments because their critical care experience was in the past. Two respondents indicated they use functional observation and orientation questions to assess for delirium. Other assessments listed included the Glasgow Coma Scale, Ranchos Los Amigos Scale, Mini Mental Status Exam (MMSE), and the Saint Louis University Mental Status (SLUMS).

When asked about actively participating in the assessment of delirium, 16 participants provided an optional comment. Five participants indicated that nursing completes and documents the delirium screens and assessments. Three participants indicated that they actively participated in the SLUMS assessment, while another reported participation in the MMSE. Three respondents indicated that they do not participate in a formal screening or assessment of delirium. Four respondents reported using functional observation to assess for delirium. One hundred occupational therapists (55.87%) and fifteen occupational therapy assistants (60.00%) reported no active participation in the assessment of delirium at their past or current hospital site.

Table 5*Delirium Assessments utilized in respondent's facility (N=204)*

	Occupational Therapists	Occupational Therapy Assistants	Total
Delirium assessments/screens utilized at respondent's facility	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Richmond Agitation Sedation Scale (RASS)	86 (48.04%)	7 (28.00%)	93 (45.59%)
Confusion Assessment Method for the ICU (CAM-ICU)	61 (34.08%)	7 (28.00%)	67 (32.84%)
Confusion Assessment Method-Severity (CAM-S)	8 (4.47%)	5 (20.00%)	13 (6.37%)
4AT	10 (5.59%)	0 (0.00%)	10 (4.90%)
Intensive Care Delirium Screening Checklist	3 (1.68%)	1 (4.00%)	4 (1.96%)
Orientation Log (O-Log)	35 (19.55%)	9 (36.00%)	44 (21.57%)
N/A	56 (31.28%)	7 (28.00%)	63 (30.88%)

Note. Data from this table was collected from question 9. This question had 11 comments; details are in the narrative. Respondents were permitted to select all that apply (see Figure 4).

Table 6*Active participation in listed delirium Assessments (N=204)*

	Occupational Therapists	Occupational Therapy Assistants	Total
Active participation in the following assessment	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Richmond Agitation Sedation Scale (RASS)	23 (12.85%)	2 (8.00%)	25 (12.25%)
Confusion Assessment Method for the ICU (CAM-ICU)	33 (18.44%)	3 (12.00%)	36 (17.65%)
Confusion Assessment Method-Severity (CAM-S)	3 (1.68%)	2 (8.00%)	5 (2.45%)
4AT	8 (4.47%)	0 (0.00%)	8 (3.92%)
Intensive Care Delirium Screening Checklist	1 (0.56%)	0 (0.00%)	1 (0.49%)
Orientation Log (O-Log)	17 (9.50%)	5 (20.00%)	22 (10.78%)
As an OTA, I do not participate in the assessment of delirium through assessments/screens			16 (7.84%)
As an OTR, I do not participate in the assessment of delirium through assessments/screens			100 (49.02%)
Other/comments			16 comments

Note. Data from this table was collected from question 10. Respondents were permitted to select all that apply (see Figure 4).

Barriers and Supports for Occupational Therapy

Table 7 indicates the familiarity of occupational therapy practitioners with the diagnosis Post-Intensive Care Syndrome (PICS). When asked about the practitioner's level of familiarity with PICS, 20.11% of respondents reported being "very familiar" with PICS. These respondents

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only represented occupational therapists; zero occupational therapy assistants reported being “very familiar” with PICS. The majority of the total respondents (45.10%) reported being “somewhat familiar” with PICS. When looking at the occupational therapy assistant data separately from the occupational therapist data, the majority of occupational therapy assistants (40.00%) reported being “Not so familiar” with PICS.

Table 7

Post-Intensive Care Syndrome (N=204)

	Occupational Therapist	Occupational Therapy Assistants	Total
I am familiar with the diagnosis “Post-Intensive Care Syndrome,” also known as PICS	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Very familiar	36 (20.11%)	0 (0.00%)	36 (20.11%)
Somewhat familiar	83 (46.37%)	9 (36.00%)	92 (45.10%)
Not so familiar	38 (21.23%)	10 (40.00%)	48 (23.53%)
Not at all familiar	22 (12.29%)	6 (24.00%)	28 (13.73%)

Note. Data from this table was collected from question 11 (see Figure 4).

ICU rounding is a daily collaborative meeting between the critical care team, patient, and family members. The information discussed during ICU rounds may include diagnostic, therapeutic, and organizational aspects of the patient’s care (Hillmann et al., 2022). Table 8 indicates the days of the week an OT team member attends ICU rounds at participants’ respective past or current hospital sites. The majority of the total participants (39.22%) reported that no one from OT attends ICU rounds. The data does indicate that the next highest participant response (19.12%) was that an OT attended ICU rounds five times a week. Thirty-two

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participants (15.69%) reported another therapy team member, such as a physical therapist or speech-language pathologist, attends ICU rounds on behalf of OT.

Table 8

ICU Rounds (N=204)

	Occupational Therapist	Occupational Therapy Assistants	Total
An OT team member attends ICU rounds on behalf of the OT department	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
1x/week	15 (8.38%)	5 (20.00%)	20 (9.80%)
2x/week	6 (3.35%)	2 (8.00%)	8 (3.92%)
3x/week	10 (5.59%)	2 (8.00%)	12 (5.88%)
4x/week	2 (1.12%)	0 (0.00%)	2 (0.98%)
5x/week	33 (18.44%)	6 (24.00%)	39 (19.12%)
No one from OT attend ICU rounds	76 (42.26%)	4 (16.00%)	80 (39.22%)
Another therapy member (e.g., PT, SLP) attends rounds on behalf of OT	29 (16.20%)	3 (12.00%)	32 (15.69%)
N/A	19 (10.61%)	4 (16.00%)	23 (11.27%)

Note. Data from this table was collected from question 12 (see Figure 5). Respondents were permitted to select all that apply.

The following information will pertain to Table 9. When respondents were asked if the ICU medical team (e.g., nurses and doctors) understood the unique contributions of OT, the majority (51.47%) “agreed.” The second highest response (33.33%) was “disagree.” Participants were permitted to submit an optional comment. There were 31 additional comments made by the respondents.

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The majority of additional comments indicated that the ICU team is more familiar with PT, values PT more than OT, or views OT and PT as one entity. Two respondents reported that OT is only viewed as a “mobilizer” and not valued for the contributions that can be brought to delirium management. Four respondents reported that education on the value of OT is ongoing and that some team members may understand the value of OT. One respondent indicated that the ICU team delays therapy engagement until the patient is weaned off the ventilator. One respondent states that the experience of the professional may influence their understanding of OT. At least two respondents stated that the nursing staff is more aware of the contributions of OT when compared to other professions, such as physicians.

Table 9

Personal Insight & Perspectives (N=204)

	Occupational Therapists	Occupational Therapy Assistants	Total
I feel the ICU medical team (e.g., nurses and doctors) understand the unique contributions of OT	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Strongly agree	12 (6.70%)	2 (8.00%)	14 (6.86%)
Agree	91 (50.84%)	14 (56.00%)	105 (51.47%)
Disagree	61 (34.08%)	7 (28.00%)	68 (33.33%)
Strongly disagree	15 (8.38%)	2 (8.00%)	17 (8.33%)
Other/Comments			31 comments

Note. Data from this table was collected from question 13 (see Figure 5).

The following information will pertain to Table 10. The majority of OT practitioners either “agree” (56.86%) or “strongly agree” (35.78%) that the ICU is considered a specialty setting. None of the respondents responded “strongly disagree” (0.00%) when asked if the ICU is

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considered a specialty setting. There were 23 comments provided in the optional comment section. One respondent stated that the ICU requires very specific training and ongoing education. One respondent reported that ICU care requires meaningful and purposeful therapeutic treatment to be successful and progress toward healing. Seven respondents stated that the familiarity and comfort with line management, monitors, lab values, and vital signs are the reason the ICU is considered a specialty area. One respondent reported that new graduates do not have the confidence or experience to work with patients on ventilators. Another respondent stated that family and patient education is important to start in the ICU but can be hindered by medications, sedation, and daily staffing. The type of ICU setting is a factor according to two respondents. They reported that the cardiac or neuro ICU might be more specialized than a general ICU setting. Cognitive retraining in the ICU was mentioned as a factor in considering the ICU as a specialty setting. One respondent reported that they work in a small hospital and thus, do not consider the ICU a specialty setting. Another respondent stated that OT services could often be initiated before physical and speech therapy services, and this is attributed to the additional education and training that OT practitioners acquire while working in an ICU setting. One respondent reported that they do not consider the ICU a specialty setting and that OT services are more appropriate when a patient is discharged from the ICU.

The following information will pertain to Table 11. When asked if OT-specific ICU best practice guidelines would be beneficial for new and existing OT practitioners, more than half of all respondents (65.20%) “strongly agree.” One respondent (0.49%), an occupational therapy assistant, “strongly disagreed.” Overall, the majority of respondents either “strongly agreed” (65.20%) or “agreed” (31.86%) that OT-specific ICU best practice guidelines would be beneficial for new and existing OT practitioners.

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Table 10*Personal Insight & Perspectives (N=204)*

	Occupational Therapists	Occupational Therapy Assistants	Total
I consider the ICU a specialty setting for OT practitioners	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Strongly agree	64 (35.75%)	9 (36.00%)	73 (35.78%)
Agree	104 (58.10%)	12 (48.00%)	116 (56.86%)
Disagree	11 (6.15%)	4 (16.00%)	15 (7.35%)
Strongly disagree	0 (0.00%)	0 (0.00%)	0 (0.00%)
Other/Comments			23 comments

Note. Data from this table was collected from question 14 (see Figure 5)

Table 11*Personal Insight & Perspectives (N=204)*

	Occupational Therapists	Occupational Therapy Assistants	Total
I believe OT-specific ICU best practice guidelines would be beneficial for new and existing OT practitioners	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Strongly agree	121 (67.60%)	12 (48.00%)	133 (65.20%)
Agree	54 (30.17%)	11 (44.00%)	65 (31.86%)
Disagree	4 (2.23%)	1 (4.00%)	5 (2.45%)
Strongly disagree	0 (0.00%)	1 (4.00%)	1 (0.49%)

Note. Data from this table was collected from question 15 (see Figure 5).

Discussion

The majority of OT practitioners either “agree” (56.86%) or “strongly agree” (35.78%) that the ICU is considered a specialty setting. The majority of respondents either “strongly agreed” (65.20%) or “agreed” (31.86%) that OT-specific ICU best practice guidelines would be beneficial for new and existing OT practitioners. These results are in alignment with prior similar studies, including Costigan et al. (2019) and Rapolthy-Beck et al. (2022). This study has helped identify key factors that influence the scope and proficiency development of practitioners working in an adult critical care setting. These factors include the ICU experience of the practitioner, ICU onboarding training, knowledge of delirium management, and site-specific OT protocols and interventions. Additional barriers identified in this study are the lack of practitioner familiarity with PICS, lack of OT representation during ICU rounds, and diminished awareness by the critical care team of the unique contributions OT can bring to the ICU environment.

In addition, research (Alvarez et al., 2017; Davidson et al., 2013; Dinglas et al., 2013; Morrow & Laxton, 2019) supports occupational therapy as an intervention for delirium and family engagement. However, this study has indicated that 49.02% of occupational therapists and 7.84% of occupational therapy assistants are not involved in the assessment of delirium. The AOTA (2022) reported in the draft release position paper on critical care that occupational practitioners need to be involved in the prevention and screening of delirium, as well as client-centered interventions to stave off delirium in the ICU setting (p. 3). It is the position of the AOTA (2022) that OT practitioners are instrumental in the evaluation process of cognitive performance and identification of risk factors for delirium.

The AOTA (2022) also acknowledged the impact of post-intensive care syndrome (PICS) on the quality of life of ICU survivors. As stated in the literature review, PICS can cause muscle

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weakness, balance problems, anxiety, depression, and decreased cognitive function (Davidson et al., 2013). The AOTA (2022) stated that OT interventions that focus on the facilitation of coping skills, resilience, and cognitive processing can be beneficial in diminishing the severity of ICU-acquired impairments (p. 7). This study found that 23.53% of OT practitioners were “not so familiar” and 13.73% were “not at all familiar” with the diagnosis of post-intensive care syndrome. It is imperative that OT practitioners working in the ICU be aware of the risk factors for PICS as it directly impacts at least 50% of ICU survivors (American Thoracic Society, 2020) and 30% of family members (Davidson et al., 2013).

The researcher identified continuity of care as a theme within the literature review. It is the position of the AOTA (2022) that OT practitioners should be present during interprofessional rounds when possible (p. 10). The authors of the draft position paper also recommend that OT practitioners engage in interprofessional communication when patients move from the intensive care unit to the medical-surgical floor (also referred to as “telemetry” or “step-down floor”) (AOTA, 2022). They liken this to how physicians and intensivists provide a medical summary to the next provider to ensure continuity of care. This study found that 39.22% of OT practitioners reported no one from OT regularly attended ICU rounds; 15.69% reported another therapy team member (outside of OT) attended ICU rounds, and 19.12% reported an OT attended ICU rounds at least five times a week. When an OT practitioner attends rounds, it increases the chance to identify the readiness of patients’ ability to engage in therapy services, which may include mobility and engagement in occupations (AOTA, 2022, p. 10).

The AOTA (2022) reported that continuing education courses, mentorship, and critical care experience are necessary to learn the skills needed to provide OT services in the ICU environment (p. 12). The AOTA offers advanced certifications in gerontology, pediatrics, and

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physical rehabilitation. There are also specialized certifications available in driving & community mobility, environmental modifications, feeding/eating/swallowing, low vision, and school systems. The AOTA (2022) offers CEU courses and acute and critical care fellowship programs; however, there are currently no critical care certifications offered. The AOTA has four approved fellowship programs for acute and critical care. These include Duke University Hospital, Houston Methodist Hospital, Johns Hopkins Hospital, and University of Chicago Medical Center. Each fellowship program is designed to accept one candidate. In comparison to other medical professions, there are 166 critical care fellowship programs in the U.S. for physicians with 601 candidate positions (Le et al., 2021).

Implications for Practice and Future Research

This study only asked participants about their satisfaction level with the training received. Insights into learning styles and preferences were not addressed. Braungart et al. (2020) stated that for healthcare practitioners to be effective educators, they must be knowledgeable about the content, environment, and learner. They must also be cognizant of the learning process. When a healthcare practitioner is educating and training another healthcare practitioner, collaboration needs to occur to understand the deficits and support in learning new material. Feedback and follow-up must occur (Braungart et al., 2020). The quality and quantity of ICU onboarding and training of the participants are unknown. It may be beneficial to explore ICU observation hour requirements to quantify better the amount of training necessary for new therapists entering this area of practice.

The results in Table 10 indicate that the majority of OT practitioners either “agree” (56.86%) or “strongly agree” (35.78%) that the ICU is considered a specialty setting. Other disciplines, such as nursing and physicians, have critical care certifications and fellowships to

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quantify themselves as critical care professionals (Lopez, 2020; ACP, 2021; AACN 2022). According to the American Association of Critical-Care Nurses (AACN), to become a Critical-Care Registered Nurse (CCRN Adult), a registered nurse or advanced practicing registered nurse must complete either a two-year option with 1,750 hours of direct care for acutely/critically ill adult patients or a five-year option with 2,000 hours of direct care of acutely/critically ill adult patients (AACN, 2022). According to the American College of Physicians (ACP), for a doctor to become an intensivist, they must complete a two or three-year fellowship in subspecialty training including critical care, pulmonary, advanced general internal medicine, cardiovascular disease, or gastrointestinal disease (ACP, 2021). This indicates an ongoing need for experienced therapists in the ICU environment. Further research into possible critical care certification would be beneficial.

Limitations

Limitations exist within this study. The study was limited to OT practitioners within the state of Ohio. The sampling reflected the max number of recipients permitted through the Survey Monkey software, which is 10,000. All occupational therapists in the state of Ohio with an e-mail listed through the OTPTAT Board were contacted for participation, totaling 6,958. Only 3,042 occupational therapy assistants out of a possible 5,097 were contacted about participation in this survey due to the 10,000-recipient restriction. Occupational therapists were selected as the majority target audience due to questions regarding assessments. Although the survey was sent to 10,000 recipients, it is unknown how many recipients received the e-mail. This study only included e-mail distribution to invite participants. This study might have generated more responses if there were additional distribution methods, including outside of the state of Ohio. The primary researcher created the survey prior to the August 2022 release of the AOTA draft

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position paper on the role of OT in critical care. The AOTA draft position paper may have informed the development of survey questions.

Conclusion

Research into the role of occupational therapy in intensive care settings is growing. This study provides insight into the current knowledge, behaviors, and opinions of occupational therapy practitioners' role in adult critical care. The development of OT-specific best practice guidelines would be beneficial for practitioners working in an adult critical care environment. Future research into critical care experience, onboarding training, understanding of delirium management, and OT-specific protocols and interventions would be beneficial to guide the development of best practice guidelines.

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Appendix

Survey Questions

Figure 1

Capstone Survey

Consent Form for Participation in a Research Study Shawnee State University

1. **Study Title:** The Role of Occupational Therapy in Intensive/Critical Care
 2. **Performance Site:** Shawnee State University
 3. **Purpose of the Study:** The purpose of this non-experimental survey research project is data collection on the current knowledge, behaviors, and opinions of Occupational Therapy practitioners' role in the critical/intensive care unit.
 4. **Subject Inclusion:** To participate in this survey, you must be an occupational therapy practitioner (OTR or COTA) licensed and practicing in OHIO and have current or past experience working in an Adult INTENSIVE CARE UNIT (ICU).
 5. **Number of subjects:** Over 6,000 therapists have been invited to participate in this descriptive survey research. This number reflects OT practitioners who have provided an email address on record with the OTPTAT Board. The number of practitioners who meet the inclusion criteria will be significantly less. I obtained your email address from the Ohio OT/AT/PT licensure board.
 6. **Study Procedures:** You will be asked to take a 15-question survey with an anticipated completion time of 5 minutes. You will be asked to complete a survey containing questions regarding your experience with onboarding training in the ICU, assessments performed in the ICU, and ICU protocols/processes.
 7. **Benefits:** While there are no direct benefits from participating in this study, your contribution to this study may advance the OT profession, with the results of this survey having the potential to guide the development of best practice guidelines for OTs working in critical/intensive care.
 8. **Risks:** There is minimal risk in participating in this online survey. Participation is voluntary, and confidentiality protections are used to protect your information. This survey is anonymous. Survey Monkey uses encrypted methods to ensure confidentiality. Only the study researchers will have access to the data obtained, and the participant's e-mail address will be removed from the research files.
 9. **Right to Refuse:** You may choose not to participate or withdraw from the study without penalty or loss of any benefit to which you might otherwise be entitled.
 10. **Confidentiality:** The researcher will make every effort to prevent a breach of information. The data that is generated from all survey questions will be kept confidential. No identifying information will be used. When study results are presented in any format, findings will be presented in aggregate. IP addresses associated with you when you access the survey are encrypted through SurveyMonkey and not accessible to the researcher. Although the researcher will make every effort to protect your confidentiality, there is a very low risk that this may be breached.
 11. **Voluntary Participation:** There will be no penalty or loss of benefits if you refuse to participate in this study. Your refusal to participate in this study will not affect your relationship with Shawnee State University. In addition, you may choose to discontinue your participation without any penalty or loss of benefits.
- By clicking "Yes, I agree to participate in this research," I agree to participate in the study described above. I understand that I can contact the Associate Provost, Dr. Jennifer Pauley, at jpauley@shawnee.edu, 740-351-3550, with any questions, comments, or concerns.

Figure 2

* 1.

Below you have the choice of whether you would like to consent to participate in this research. This will be considered an electronic signature on a consent document.

- Yes, I agree to participate in this research
- No, I do NOT consent to participate in this research

* 2. I have experience working in an **ADULT** intensive care unit.

- Current experience
- Past experience
- No experience

Capstone Survey Continued

* 3. I am a licensed ___ practitioner in the state of Ohio.

- OT
- OTA

* 4. I have ___ years of experience as an OT practitioner.

- 1-5 years
- 6-10 years
- 11-20 years
- 21 years +

* 5. I have ___ years of experience working in an Adult ICU.

- Less than 1 year
- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21 years +

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Figure 3

* 6. I received the following ICU onboarding training (***select all that apply***):

- Facility facilitated mentorship
- Skills check off
- Manual/protocol/guideline review
- Online modules (e.g., HealthStream)
- Observation
- No formal training

Other (Please specify any additional training/onboarding you may have received. This may include formal or informal training)

* 7. I am satisfied with the quality of training I received to prepare me for working in the ICU.

- Very satisfied
- Satisfied
- Dissatisfied
- Very dissatisfied

* 8. My rehab department has ***OT-specific*** ICU protocols/guidelines (e.g., delirium protocols, ICU journals). *Keep in mind, this does not refer to general ICU guidelines. **The question refers to guidelines unique to Occupational Therapy.***

- Yes
- No
- Other (please specify)

- N/A

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Figure 4

* 9. The following delirium assessments/screens are utilized at my facility (**Select all that apply**):

- Richmond Agitation Sedation Scale (RASS)
- Confusion Assessment Method for the ICU (CAM-ICU)
- Confusion Assessment Method- Severity (CAM-S)
- 4AT
- Intensive Care Delirium Screening Checklist (ICDSC)
- Orientation Log (O-Log)
- N/A

Other (Please specify any additional assessments/screens used to assess for delirium within your facility):

* 10. **I actively** participate in the assessment of delirium through the use of the following assessments/screens (**Select all that apply**):

- Richmond Agitation Sedation Scale (RASS)
- Confusion Assessment Method for the ICU (CAM-ICU)
- Confusion Assessment Method - Severity (CAM-S)
- 4AT
- Intensive Care Delirium Screening Checklist (ICDSC)
- Orientation Log (O-Log)
- As an OTA, I do not participate in the assessment of delirium through assessments/screens
- As an OTR, I do not participate in the assessment of delirium thorough assessments/screens
- N/A

I use a different assessment/screening tool to assess for delirium (Please specify):

* 11. I am familiar with the diagnosis "Post-Intensive Care Syndrome," also known as PICS.

- Very familiar
- Somewhat familiar
- Not so familiar
- Not at all familiar

Figure 5

* 12. An OT team member attends ICU rounds on behalf of the OT department. **(Select all that apply)**

- 1x/week
- 2x/week
- 3x/week
- 4x/week
- 5x/week
- No one from OT attends ICU rounds
- Another therapy member (e.g., PT, SLP) attends rounds on behalf of OT
- N/A

* 13. I feel the ICU medical team (e.g., nurses and doctors) understand the unique contributions of OT.

- Strongly agree
- Agree
- Disagree
- Strongly disagree

Explain your reasoning (OPTIONAL)

* 14. I consider the ICU a specialty setting for OT practitioners.

- Strongly agree
- Agree
- Disagree
- Strongly disagree

Explain your reasoning (OPTIONAL)

* 15. I believe OT specific ICU best practice guidelines would be beneficial for new and existing OT practitioners.

- Strongly agree
- Agree
- Disagree
- Strongly disagree