

Delirium in Acute Care: Occupational Therapists' Perspectives, Experiences, and Practice Implications

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Abstract

The prevalence of delirium places assessment, prevention, and management (APM) at the forefront of occupational therapy intervention in acute care. This qualitative descriptive feasibility study examined occupational therapists' perceptions of APM in acute care settings in the Pacific Northwest. In a convenience sample, 25 of 46 (62%) participants returned surveys addressing roles, assessment, intervention, barriers, recommendations, and preparedness. Data revealed opportunities for improving practice consistent with those reported in the current literature. Education emerged as a theme from the data across roles, strategies for prevention and management, barriers to implementation, and means to improve site-specific APM services. Authors recommend additional education and research expanded to additional geographic and practice settings.

Keywords: delirium, occupational therapy, acute care, feasibility, qualitative descriptive

Introduction and Background

Delirium is a rapid onset of impaired attention and lack of awareness, with a change in at least one cognitive domain, as described in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2013). This state is common among hospitalized older adults and is associated with adverse outcomes. These outcomes include an increase in morbidity, mortality, and admission into long-term care, as well as the loss of functional independence and quality of life (Chong et al., 2014; Cullen & Balas, 2017; Foster et al., 2010). Changes may present as impaired memory, disorientation, disorganized thinking, and/or perceptual disturbances.

Bond and Goudie (2015) reported a 20-30% prevalence of delirium in hospitals for all diagnoses with up to 50% prevalence for patients post hip surgery. The highest risk for delirium includes patients 65 and older; patients with baseline cognitive impairments, dementia, poor mobility, visual and hearing impairments, sleep deprivation, severe illness; and post general anesthesia. Other risk factors include urinary retention, infection, sepsis, dehydration, hypoxia, mechanical ventilation, inadequate pain relief, polypharmacy, and the use of physical restraints (Hoolahan, 2011; Palacios-Ceña et al., 2016). Changing demographics influence the incidence of delirium. By 2030, the United States population of adults 65 and older is estimated to increase from 35 million in 2000 to approximately 71 million (Centers for Disease Control and Prevention [CDC], 2003). The rise in the number of older adults living with dementia also increases risk of delirium (Siddiqi, 2016). Despite prevalence and negative outcomes, delirium may be overlooked or misdiagnosed (Bond & Goudie, 2015), and the use of systematic screenings for delirium remains low (Greve et al.,

2012). According to Rice et al. (2011), healthcare professionals in acute care fail to detect cases of delirium 53-75% of the time. Detected cases may be poorly managed (Hoolahan, 2011). A lack of consensus and inconsistent use of protocols contribute to the incidence and poor management of delirium (Siddiqi, 2016).

Occupational therapists apply knowledge of occupation and its effect on performance, health, and wellbeing to help clients participate in daily life activities (American Occupational Therapy Association, 2014). Schweikert and colleagues (2009) were among the first to examine the influence of physical and occupational therapy intervention on functional outcomes in patients in intensive care on mechanical ventilation. In a randomized controlled trial, they found the program of early mobilization to reduce delirium as measured by the Confusion Assessment Method - ICU. This included reductions in ICU delirium days and time, and hospital days with delirium (Schweikert et al., 2009). Needham et al. (2010) also conducted a quality improvement study with mechanically ventilated patients in a medical ICU, and found physical and occupational therapy directed early mobilization to decrease delirium.

While some studies have examined occupational therapy's role in the prevention and management of delirium, we found limited evidence exploring occupational therapists' perspectives and experiences of delirium management in acute care as part of the interprofessional team. The lack of evidence indicates a gap in research for occupational therapy practice. The purpose of the study was to explore acute care occupational therapists' perceptions of the role of occupational therapy in assessment, prevention, and management (APM). Additionally, the authors' aim was to identify implications for practice and guide future research.

The implementation of evidence-based protocols to prevent and manage delirium reduces associated negative outcomes. Morandi, Brummel, and Ely (2011) proposed an approach for care of mechanically ventilated patients addressing awakening and breathing coordination, delirium monitoring/ management, and early exercise/mobility (ABCDE). Their interdisciplinary approach demonstrated increased spontaneous breathing, improved survival, and reduced delirium. In 2013, Balas et al. (2013) reported implementation of clinical practice guidelines for the management of pain, agitation, and delirium (PAD) in adult patients in the intensive care unit (ICU). They examined best evidence and developed statements of best practice for each section. Devlin et al. (2018) expanded existing pain, agitation, and delirium (PAD) guidelines to create pain, agitation/sedation, delirium, immobility (rehabilitation/mobilization), and sleep (disruption) (PADIS) guidelines for clinical practice.

Tobar and colleagues (2017) articulate multiple avenues for occupational therapy to prevent delirium, including sensorimotor, cognitive, environmental, and social interventions. According to Alvarez et al. (2017), patients who are active in their activities of daily living (ADLs) show positive outcomes in a variety of pathologies. Because each patient has a unique occupational profile, there is no one-size-fits-all management strategy; therefore, to reduce the impact of delirium, interventions are best focused on risk reduction, re-orientation, and re-engagement of a patient's typical routines (Hoolahan, 2011). Time and place re-orientation may include placement of familiar photos and objects in the patient's room, the presence of familiar people, and the resumption of routines to help normalize the hospital experience such as daily walks or listening to music before bed. Incorporating aspects of a patient's daily routine into

their management plan helps to maintain mobility, hydration, nutrition, support functional independence in ADLs, and regulate a patient's sleep cycle (Hoolahan, 2011).

In addition to re-orientation and resumption of familiar routines, other interventions aligned with occupational therapy's scope of practice may be beneficial. Studies suggest that standard nonpharmacological approaches combined with early and intensive occupational therapy interventions helped to significantly reduce the incidence of delirium, decrease duration (Alvarez et al., 2017; Pozzi et al., 2017; Rains & Chee, 2017; Tobar et al., 2016), improve functional independence (Alvarez et al., 2017; Pozzi et al., 2017; Tobar et al., 2017), and resulted in a higher level of cognitive performance when compared to controls (Tobar et al., 2017). Interventions include multisensory stimulation to promote alertness, keep patients active, and prevent sensory deprivation, re-engagement in ADLs to promote functional independence, maintenance of upper extremity mobility to prevent deconditioning, cognitive stimulation to maintain a connection with the environment and exercise cognitive functions, environmental modifications to promote spatial-temporal orientation and rest, and family education to promote supportive interaction (Alvarez et al., 2017; Pozzi et al., 2017; Rains & Chee, 2017; Tobar et al., 2017). Given their multidimensional approach to patient care, the evidence supports the efficacy of occupational therapy in the prevention and management of delirium and indicates therapists' unique role within the interdisciplinary team.

Most recently, Costigan et al (2019) conducted a scoping review of occupational therapy in the ICU. They reported mobility, physical rehabilitation, and activities of daily living as the most common types of intervention. Cuevas-Lara et al. (2019) conducted a

systematic review examining effectiveness in acute geriatric wards. They also reported occupational therapy as effective in reducing delirium. These recent reviews independently recommended further inquiry to verify and expand the role of occupational therapy in assessment, prevention, and management of delirium.

Methodology

Descriptive inquiry is commonly used to study the state of an issue or phenomenon. Nayar and Stanley (2014) described qualitative descriptive inquiry as useful to examine people in context to illuminate a phenomenon of interest. The researchers designed a descriptive study generating primarily qualitative data to explore occupational therapists' perceptions related to acute care practice with persons experiencing delirium. The project was a feasibility study, investigating if a larger project would be relevant, manageable, and justifiable in terms of resources. The authors employed survey-based research with Likert-type closed questions and open-ended qualitative questions, enabling respondents to elaborate on complex topics describing how practice happens.

Researchers contacted rehabilitation directors at six large regional hospitals, requesting permission to distribute surveys during acute care occupational therapy staff meetings. Researchers targeted recruiting a convenience sample of 30-50 participants. Researchers distributed surveys and informed consent to rehabilitation managers at acute care occupational therapy staff meetings. Prior to the meetings, acute care occupational therapists were informed of the optional anonymous participation. Surveys were collected, placed into sealed envelopes and deposited into a collection bin after each meeting. No follow up questionnaires or surveys were conducted.

Participants

Following Pacific University Institutional Review Board (IRB) approval, February 2020 [1368661-1], researchers contacted acute care occupational therapy departments in the Pacific Northwest for permission to distribute and collect paper surveys during departmental meetings. Researchers sought a convenience sample of licensed occupational therapists working full-time or part-time in acute care. Researchers excluded certified occupational therapy assistants from this study. While pilot studies may calculate sample size for a main study, neither feasibility studies nor qualitative descriptive studies typically involve power calculations (Arain et al. 2010). All participants were de-identified with the use of a tear away IRB approved informed consent.

Instrument

The researchers developed a survey informed by a review of the literature on the role of occupational therapy in the management of delirium in acute care. Researchers requested feedback from five stakeholders for face validity, confirming relevance to research questions and readability of the survey. A feasibility study is often used to design a usable outcome measure needed for a main study (Arain et al. 2010). A resulting 12-item survey consisted of multiple-choice, Likert-type items, and open-ended items (Table 1). Questions prompted acute care occupational therapists to describe their roles and perspectives in delirium APM. Researchers distributed paper surveys, including informed consent, to all occupational therapists attending the meetings. Following IRB protocol, researchers anonymized survey responses, destroying all copies following analysis.

Table 1**Survey Items**

Question	Type
Describe the role OTRs play in the assessment, prevention, and management (APM) of delirium in acute care.	Open-ended
List what OTRs in this setting use for delirium APM.	Open-ended
How many times per week do you provide delirium APM?	Open-ended
How prepared do you feel to provide delirium APM?	Likert-type, 1-5
How does delirium impact your productivity as an OTR?	Likert-type, 1-5
How does communication between professions impact your ability to provide delirium APM?	Likert-type, 1-5
How do practitioners share information about a patient with delirium?	Open-ended
In general, therapists in this hospital feel that delirium APM is ... necessary.	Likert-type, 1-5
Are there other staff on site that manage delirium? If so, how?	Open-ended
What are the barriers to delirium APM at this site?	Open-ended
What do you think might help improve delirium APM at this site?	Open-ended
Additional comments.	Open-ended

Within qualitative descriptive inquiry, data may be analyzed quantitatively and qualitatively to illuminate an issue. Researchers entered data into a Microsoft Excel[®] spreadsheet for management. Following data collection, two researchers separately analyzed Likert-type and open-ended data, retained independent audit trails, and then compared findings, matching themes and categories. A third researcher independently coded to triangulate data, mediating any discrepancies for consensus. A fourth researcher reviewed data entry, coding, and triangulation for meaning. Researchers applied the Taylor-Powell and Renner approach to content analysis of qualitative data (Taylor-Powell & Renner, 2003). Following multiple readings of the text, researchers

focused on each question, identifying categories that emerged from the data. An iterative process of reading and rereading allowed categorical redefinition (with subcategories) to a point of saturation and clarity. Researchers also examined Likert-type items using frequencies and percentages to describe the sample and generate meaning. Next, researchers examined open-ended items for connections within and between items, connections within and between categories, allowing emergence of themes and relationships of interest. Finally, researchers further synthesized Likert-type and open-ended items to derive implications for practice.

Researchers applied multiple measures to ensure trustworthiness, including a mix of skill. Two researchers were entry-level clinical doctorate students completing capstone at the time of the study. Two other researchers were academic educators with 21 years and 39 years of experience. All researchers applied reflexivity to acknowledge any pre-existing assumptions and bracketed or set aside previous experiences and biases (Table 2).

Table 2

Sample Coding: Education

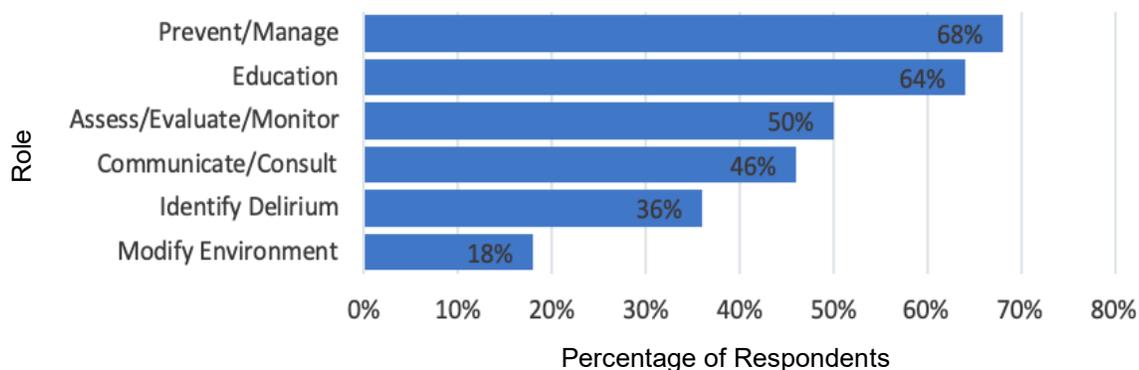
Participant	Quotation	Category	Subcategory
4	provide <i>education and training</i> to family and staff on way to prevent and manage delirium if present	Education	Family Staff
7	<i>Education</i> of staff.	Education	Staff
8	Provide family and nursing <i>education</i> on ways to prevent confusion and/or delirium from occurring [<i>sic</i>] or getting worse. Provide "optimizing orientation" handout to families	Education	Family Staff Strategies Educ material
9	Provide <i>education</i> to patients, family, and staff on strategies to clear and prevent delirium	Education	Patients Family Staff
12	providing <i>education</i> in the moment	Education	Timely
18	providing <i>education</i> regarding: general risk factors and preventative strategies, identifying effective techniques ..., and <i>educating</i> family/other disciplines	Education	Content Family Staff

Results

Researchers noted a return rate of 62%, 25 of 46 participants responded. Respondents projected 50% of occupational therapists in the hospital believed delirium APM as necessary, 39.3% believed APM to be somewhat necessary, 3.6% believed APM not to be necessary. 7.1% of participants did not respond to this question. When asked to describe the role of occupational therapy, data revealed the most robust categories as prevention and management (67.9%), education (64.3%), and their extensive subcategories [Figure 1]. Subcategories for prevention and management included reorienting, therapeutic activity, promoting routines, and sleep hygiene. Subcategories of education included family, staff, and caregivers. Assessment was the third most frequent category (50%). Subcategories for assessment include delirium-specific screenings (CAM-Short or CAM-ICU) (n=16); informal and formal cognitive screenings (Montreal Cognitive Assessment, Short Blessed Test, gross testing) (n=9); and behavioral observations observation (n=17). Additional categories include communication and consultation (46%), identifying delirium (36%), and modifying environment (18%). There are no cohesive subcategories for these items.

Figure 1

The Role Occupational Therapists have in APM of Delirium in Acute Care



Assessment

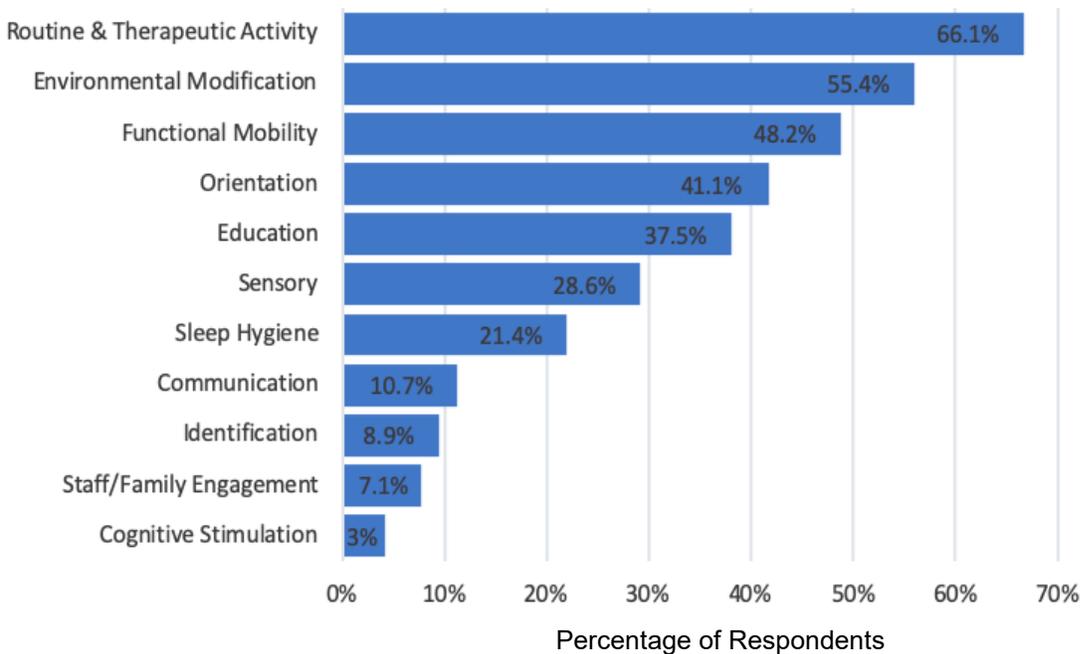
Participants identified the Confusion Assessment Method (CAM) Short-Form or CAM-ICU (57.1%), observation of functional cognition during ADL participation (50%), and other cognitive screens (32.1%) as most frequently used to detect signs associated with delirium. Cognitive assessments listed in the 'other' category included Montreal Cognitive Assessment; orientation to person, place, time, and situation; and general reference to cognitive screening without a specific identifier.

Prevention and Management

Participants reported a broad variety of interventions occupational therapists most commonly use to prevent and manage delirium [Figure 2]. Therapeutic, meaningful, and routine activities (66.1%) including ADLs and activities performed in a patient's typical routine. Environmental modifications (55.4%) including opening blinds, turning on lights, and reducing lighting at night. Functional mobility (48.2%) including out of bed activities, transfers, and ambulation for ADL tasks. Education (37.5%) addressed interaction with family, patient, and staff. Less frequently used interventions included cognitive stimulation (3.6%), engagement of staff and family (7.1%), and communication (documentation or in-room white board) (10.7%).

Figure 2

Interventions for Prevention and Management of Delirium

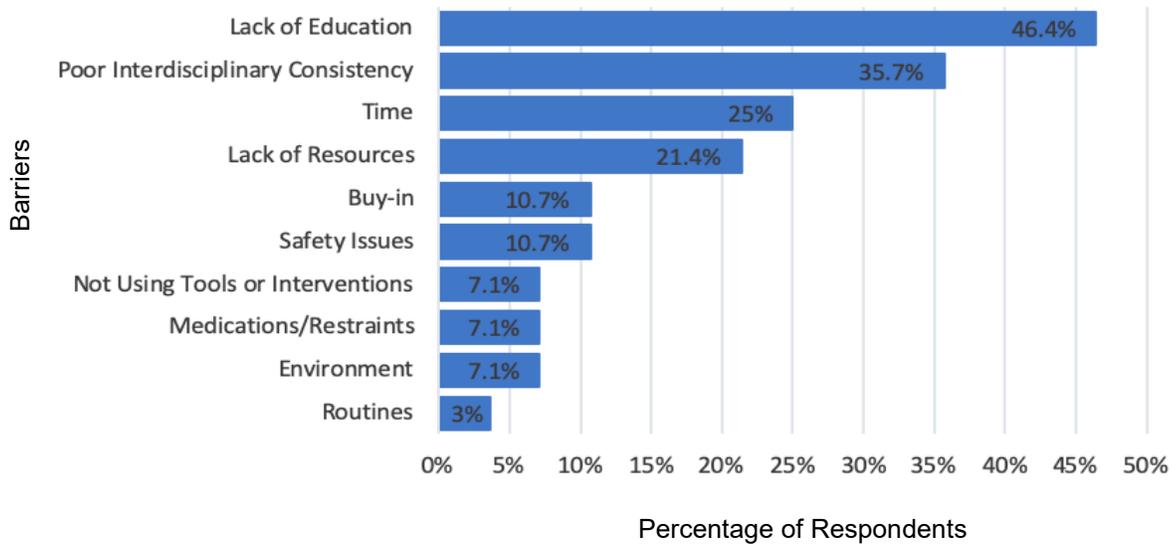


Barriers and improvements

Participants identified the most common barriers [Figure 3] and suggestions for improvements [Figure 4] at their sites. Data revealed most frequently identified barriers as lack of education of family and staff (46.4%); interdisciplinary consistency, coordination, and communication (35.7%); time to assess and implement (25%); and lack of resources (21.4%). Small numbers of participants described additional barriers of lack of staff and family buy-in (n=3), safety concerns related to mobility or unpredictable patient behavior (n=3), not using evidence-based tools or intervention (n=1), pharmacologic and physical restraints (n=2), and difficulty managing environment and daily routine (n=3).

Figure 3

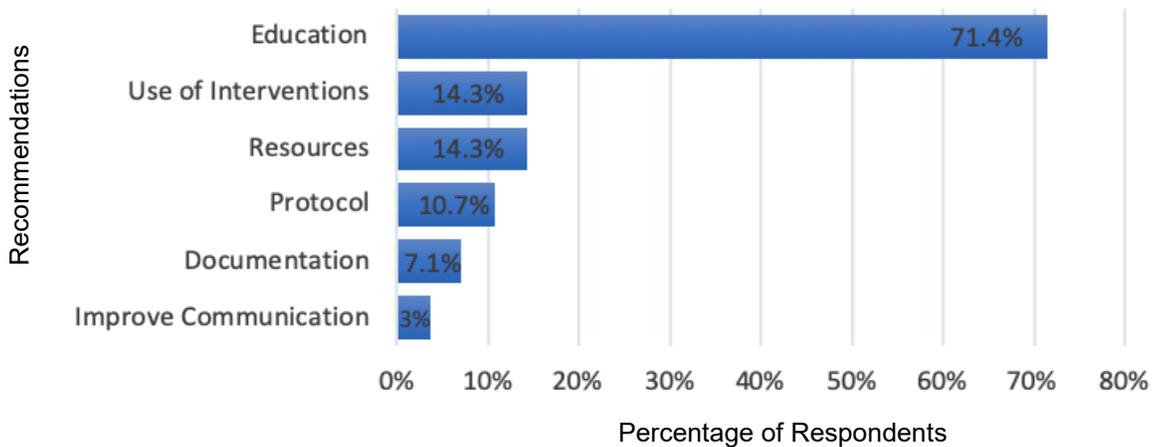
Barriers to Delirium Assessment, Prevention, and Management



To improve APM within their respective sites, participants most recommended multidisciplinary and family education (71.4%). Additional recommendations included an increasing the implementation of interventions, particularly environmental modifications (14.3%), and increasing resources (14.3%) such as the number of staff working with patients and the availability of intervention tools. Small numbers of participants also recommended increasing the use of best practice protocols (n=3), improving documentation (n=2), and using consistent language across disciplines (n=1).

Figure 4

Recommendations for Improving Delirium APM



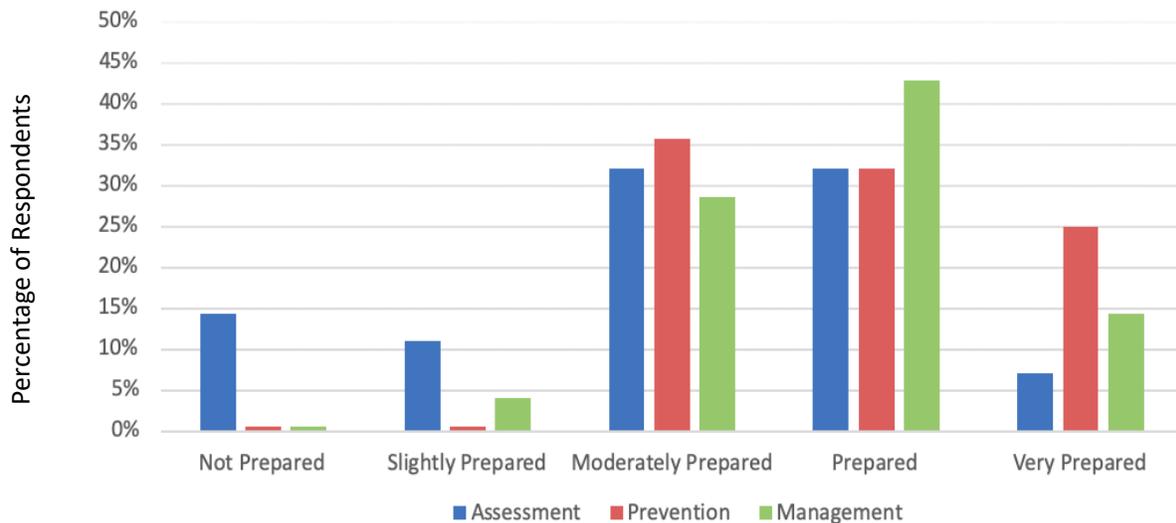
Preparedness to Provide Delirium Assessment, Prevention, and Management

Using a numeric scale, participants rated their level of preparedness to provide delirium APM, with one being not prepared and five being very prepared [Figure 5].

Participants felt moderately prepared or prepared for assessment (32% each category), prevention (36% and 32% respectively), and management (29% and 43% respectively).

Figure 5

Level of Preparedness for Delirium Assessment, Prevention, and Management



Discussion and Conclusion

Data revealed roles, assessments, prevention and management, and opportunities for improving practice, consistent with those reported in the current literature as cited above. Data also revealed multiple barriers consistent with the literature, including time, knowledge of delirium, prevention and management strategies, lack of resources, and lack of control over the environment (Boockvar et al., 2016; Palacios-Ceña et al., 2016). Education emerged as a theme from the data across roles, strategies for prevention and management, barriers to implementation, and means to improve site-specific APM services. This finding is consistent with recommendations from multiple researchers to include education (Alvarez et al., 2017; Rains & Chee, 2017; Tobar et al., 2017). While two-thirds of practitioners perceived education to be a role for occupational therapists, more than one-third did not. This finding appears in contradiction with roles identified within the Occupational Therapy Practice Framework (American Occupational Therapy Associations, 2014), offering opportunities for acute care occupational therapy practitioners as educational providers.

The need for education appears to contribute to limited APM for occupational therapy practice in acute care. Participants identified multiple areas for desired education, including CAM training, simple, concrete prevention and management techniques; regular in-services on delirium for rehabilitation staff and family education, and interdisciplinary education about delirium and the role of occupational therapy. Respondents described educational challenges across multiple survey items.

Participant 12. Ignorance, follow through, lack of consistency, belief that [delirium] is not a valid diagnosis and something to be taken seriously.

Participant 18. Make sure all disciplines are talking the same language; assure standardization of assessments; need education on treatment ideas, family education; continue education to MDs and RNs that [occupational therapists] can start early-don't have to wait until patient is following directions.

Participant 27. There is unfortunately an unspoken process in which the delirium [patient] is only managed with or without medications, thus, therapists are not used as often as could be.

Findings from the current study suggest that additional education for practitioners may be instrumental in clarifying roles, reducing barriers, and improving APM. Multicomponent education, training, and intervention strategies to improve knowledge, recognition, and treatment of delirium are well supported in the literature (Afriyie-Boateng et al., 2015; Cullen & Ballas, 2017; Voyer et al., 2015; Yanamadala et al, 2013).

Strengths and Limitations

The use of a survey preserved participants' anonymity, reducing perceived pressure or risk to participants. Open-ended items allowed for a more in-depth response, but limited the opportunity for probing questions. While multiple practitioners established face validity for the non-standardized survey, there was no opportunity for further validation. The study was time-limited to gain a snapshot of practitioners across three medical facilities. A convenience sample supports a feasibility study, without any

intent to be representative of all occupational therapists in acute care in the United States. Participants represented large medical centers in an urban area which may have more resources and opportunities for education than smaller and/or rural institutions. Despite the best intentions of researchers to bracket their beliefs, it is possible that the researchers' perspectives influence inquiry.

Implications for Occupational Therapy

Previous research has established that occupational therapists play an important role in the assessment, prevention, and management of delirium. This study of practitioners' perceptions suggests opportunities for education, practice, and research. Findings suggest acute care therapists should take a proactive role in obtaining continuing education in APM. Formal academic and continuing education could include diagnosis, assessments, and evidence-based prevention and management strategies. Practice opportunities exist for roles in advocacy, teaching, and leadership in APM. For instance, practitioners have an opportunity to propose APM within existing interprofessional delirium approaches, such as ABCFD. Acute care practitioners may present recognized approaches for team and family. Leaders may recommend improving site-specific collaboration, communication, and interprofessional education to facilitate role inclusion and reduce barriers. Future research is needed to explore the most effective methods for improving on-going interdisciplinary education, communication, and collaboration. Findings indicate a main study with broader sampling and a refined survey instrument.

The prevalence of delirium in acute care provides a direct challenge to improving occupational performance. Acute care occupational therapists need to assess, provide

intervention, manage, and prevent delirium for positive patient outcomes. Results of this study suggest opportunities for occupational therapists to address delirium in acute care. Occupational therapists may be recipients and providers of education. Therapists' roles may include leadership, patient advocacy, and education to interprofessional team members for effective APM.

References

- Afriyie-Boateng, M., Loftus, C., & Hamelin, M. A. (2015). Use of a multimodal implementation strategy to improve delirium screening by nurses on an acute care for elder's unit. *Worldviews on Evidence-Based Nursing*, 12(6), 389-391. [doi:10.1111/wvn.12120](https://doi.org/10.1111/wvn.12120)
- Álvarez, E. A., Garrido, M. A., Tobar, E. A., Prieto, S. A., Vergara, S. O., Briceño, C. D., & González, F. J. (2017). Occupational therapy for delirium management in elderly patients without mechanical ventilation in an intensive care unit. A pilot randomized clinical trial. *Journal of Critical Care*, 40, 265-265. [doi:10.1016/j.jcrc.2016.09.002](https://doi.org/10.1016/j.jcrc.2016.09.002)
- American Occupational Therapy Association. (2014). Occupational therapy practice framework: Domain and process (3rd ed.). *American Journal of Occupational Therapy*, 68(Suppl. 1), S1–S48. doi.org/10.5014/ajot.2014.682006
- American Psychiatric Association. (2013). Neurocognitive Disorders. In *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596.dsm05>
- Arain, M., Campbell, M.J., Cooper, C. L., & Lancaster, G.A. (2010). What is a pilot or feasibility study? A review of current practice and editorial policy. *BMC Medical Research Methodology*, 10 (67). <https://doi.org/10.1186/1471-2288-10-67>
- Balas, M.C., Burke, W.J., Gannon, D., Cohen, M.Z., Colburn, L., Bevil, C., Franz, D. Olsen, K.M., & Vasilivskis, E.E. (2013). Implementing the awakening and breathing coordination, delirium monitoring/management, and early exercise/mobility bundle into everyday care: Opportunities, challenges, and

lessons learned for implementing the ICU Pain, Agitation, and Delirium Guidelines. *Critical Care Medicine*, 41, S116–S127

[doi:10.1097/CCM.0b013e3182a17064](https://doi.org/10.1097/CCM.0b013e3182a17064)

Bond, P., & Goudie, K. (2015). Identifying and managing patients with delirium in acute care settings. *Nursing Older People*, 27(9), 28-32. [doi:10.7748/nop.27.9.28.s19](https://doi.org/10.7748/nop.27.9.28.s19)

Boockvar, K. S., Teresi, J. A., & Inouye, S. K. (2016). Preliminary data: An adapted hospital elder life program to prevent delirium and reduce complications of acute illness in long-term care delivered by certified nursing assistants. *Journal of the American Geriatrics Society*, 64(5), 1108-1113. [doi:10.1111/jgs.14091](https://doi.org/10.1111/jgs.14091)

Centers for Disease Control and Prevention. (2003). Public health and aging: trends in aging in the United States and worldwide. *Morbidity and Mortality Weekly Report*, 52(06), 101-106.

Chong, M. S., Chan, M., Tay, L., & Ding, Y. Y. (2014). Outcomes of an innovative model of acute delirium care: the geriatric monitoring unit (GMU). *Clinical Interventions in Aging*, 9, 603–60312. doi.org/10.2147/CIA.S60259

Costigan, F. A., Duffett, M., Harris, J. E., Baptiste, S., & Kho, M. E. (2019). Occupational therapy in the ICU: A scoping review of 221 documents. *Critical Care Medicine*, 47(12), e1014–e1021. [doi: 10.1097/CCM.0000000000003999](https://doi.org/10.1097/CCM.0000000000003999)

Cuevas-Lara, C., Izquierdo, M., Gutiérrez-Valencia, M., Marín-Epelde, I., Zambom-Ferraresi, F., Contreras-Escámez, B., & Martínez-Velilla, N. (2019). Effectiveness of occupational therapy interventions in acute geriatric wards: A systematic review. *Maturitas*, 127, 43–50. doi: [10.1016/j.maturitas.2019.06.005](https://doi.org/10.1016/j.maturitas.2019.06.005)

Cullen, E., & Balas, M. C. (2017). Delirium monitoring and management in the acute care setting. *Nurse Practitioner*, 42(12), 37- 42.

[doi:10.1097/01.NPR.0000526764.53348.d1](https://doi.org/10.1097/01.NPR.0000526764.53348.d1)

Devlin, JW, Skrobik, Y, Gélinas, C, Needham, DM, Slooter, AJC, Pandharipande, PP, Watson, L.L., Weinhouse, G.L., Nunnally, M.E. Rochweg, B., Balas, M.C., van den Googaard, M., Bosma, K.J., Brummel, N.E. Chanques, G., Denehy, L., Drouot, X., Gilles, L.F. Harris, J.E., ... Alhazzani, W. (2018). Clinical Practice Guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. *Critical Care Medicine*, 46(9), e825–e873.

[https://www.archives-pmr.org/article/S0003-9993\(10\)00034-1/fulltext](https://www.archives-pmr.org/article/S0003-9993(10)00034-1/fulltext)

Foster, N. M., Waldron, N. G. H. D., Donaldson, M., Margaria, H., McFaull, A., Hill, A., & Beer, C. D. (2010). A quality improvement project to prevent, detect, and reduce delirium in an acute setting. *Australian Journal of Advanced Nursing*, 28(2), 24-32.

Greve, I. E., Vasilevskis, E. E., Egerod, I., Bekker Mortensen, C., M., Merete, A. M., Svenningsen, H., & Thomsen, T. (2012). Interventions for preventing intensive care unit delirium. *Cochrane Database of Systematic Reviews*, (8).

<https://doi.org/10.1002/14651858.CD009783>

Hoolahan, A. (2011). OVoID delirium and improved outcomes in acute care. Introducing a model of care. *Australian Journal of Advanced Nursing*, 29(2), 30-35.

- Morandi, A. E., Brummel, N. W., & Ely, E. (2011). Sedation, delirium and mechanical ventilation: the 'ABCDE' approach. *Current Opinion in Critical Care*, 17(1), 43–49.
- Nayar, S., & Stanley, M. (2015). *Qualitative research methodologies for occupational science and therapy*. Abingdon, Oxon: Routledge.
- Needham, D. M., Korupolu, R., Zanni, J. M., Pradhan, P., Colantuoni, E., Palmer, J. B., Brower, R.G., Fan, E. (2010). Early physical medicine and rehabilitation for patients with acute respiratory failure: A quality improvement project. *Archives of Physical Medicine and Rehabilitation*, 91(4), 536–542.
doi.org/10.1016/j.apmr.2010.01.002
- Palacios-Ceña, D., Cachón-Pérez, J. M., Martínez-Piedrola, R., Gueita-Rodríguez, J., Perez-de-Heredia, M., & Fernández-de-Las-Peñas, C. (2016). How do doctors and nurses manage delirium in intensive care units? A qualitative study using focus groups. *British Medical Journal Open*, 6(1), e009678.
[doi:10.1136/bmjopen-2015-009678](https://doi.org/10.1136/bmjopen-2015-009678)
- Pozzi, C., Lucchi, E., Lanzoni, A., Gentile, S., Trabucchi, M., Bellelli, G., & Morandi, A. (2017). Preliminary evidence of a positive effect of occupational therapy in patients with delirium superimposed on dementia. *Journal of the American Medical Directors Association*, 18(12), 1091-1092.
[doi:10.1016/j.jamda.2017.09.005](https://doi.org/10.1016/j.jamda.2017.09.005)
- Rains, J. & Chee, N. (2017). The role of occupational and physiotherapy in multi-modal approach to tackling delirium in the intensive care. *Journal of the Intensive Care Society*, 18(4), 318-322. [doi:10.1177/1751143717720589](https://doi.org/10.1177/1751143717720589)

- Rice, K. L., Bennett, M., Gomez, M., Theall, K. P., Knight, M., & Foreman, M. D. (2011). Nurses' recognition of delirium in the hospitalized older adult. *Clinical Nurse Specialist*, 25(6), 299–311. [doi: 10.1097/NUR.0b013e318234897b](https://doi.org/10.1097/NUR.0b013e318234897b)
- Siddiqi, N. (2016). Predicting delirium: Time to use delirium risk scores in routine practice? *Age and Ageing*, 45(1), 9-10. <https://doi.org/10.1093/ageing/afv183>
- Schweickert, W. D., Pohlman, M. C., Pohlman, A. S., Nigos, C., Pawlik, A. J., Esbrook, C. L., Spears, L., Miller, M., Franczyk, ., Deprizio, D., Schmidt, G.A., Bowman, A., Barr, R., McCallister, K.E., Hall, J. B., Kress, J. P. (2009). Early physical and occupational therapy in mechanically ventilated, critically ill patients: A randomised controlled trial. *The Lancet*, 373(9678), 1874–1882. [doi.org/10.1016/S0140-6736\(09\)60658-9](https://doi.org/10.1016/S0140-6736(09)60658-9)
- Taylor-Powell, E. & Renner, M. (2003). *Analyzing Qualitative Data*. University of Wisconsin Extension, Cooperative Extension Publishing Operations: Madison, Wisconsin.
- Tobar, E., Alvarez, E., & Garrido, M. (2017). Cognitive stimulation and occupational therapy for delirium prevention. *Revista Brasileira De Terapia Intensiva*, 29(2), 248. [doi:10.5935/0103507X.20170034](https://doi.org/10.5935/0103507X.20170034)
- Voyer, P., Champoux, N., Desrosiers, J., Landreville, P., McCusker, J., Monette, J., Carmichael, P. (2015). Recognizing acute delirium as part of your routine [RADAR]: A validation study. *BMC Nursing*, 14(1), 1-13. [doi:10.1186/s12912-015-0070-1](https://doi.org/10.1186/s12912-015-0070-1)

Yanamadala, M., Wieland, D., & Heflin, M. T. (2013). Educational interventions to improve recognition of delirium: A systematic review. *Journal of the American Geriatrics Society*, 61(11), 1983-1993. [doi.10.1111/jgs.12522](https://doi.org/10.1111/jgs.12522)