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Empowering Caregivers in the Prevention of Clinical Delirium for At Risk Older Adults Boarding in the Emergency Department Setting

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Empowering Caregivers in the Prevention of Clinical Delirium for At Risk Older Adults Boarding in the Emergency Department Setting

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing Practice at the University of Kentucky

By

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Lexington, Kentucky

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Abstract

Background: Emergency Department (ED) overcrowding is a global healthcare crisis documented in the literature for more than a decade, impacting patient outcomes and resource availability. While awaiting delayed transfer to an inpatient room, older adults in the ED remain vulnerable to developing acute delirium. Boarding potentiates the risk for worsening health outcomes, which are further compounded by delirium. Scarcity of resources and time constraints delay delirium detection and increase risk for down-stream hospital-acquired complications, higher cost, and prolonged length of stay. Current ED models do not prioritize caregiver partnership or involvement in delirium-conscious care, which is a holistic approach to prevention, recognition, and nonpharmacologic treatments.

Purpose: The purpose of this study was to assess the effect of an educational session designed to engage caregivers in the prevention of clinical delirium for older adults boarding in the ED setting. This intervention pertained only to caregivers with attention to their knowledge, confidence, and behavior.

Methods: Caregivers for older adults (65y+) in the ED of a Level 1 Trauma Center received a 10 minute presentation on an electronic tablet with a pre- and post-intervention survey. This was a single-center quasi-experimental study with a pretest-posttest design (N=15). Descriptive statistics were used to analyze changes in three outcome variables: knowledge, confidence, and behavior change.

Results: A statistically significant ($p<.05$) change in knowledge, confidence, and implementation of reality orientation and environment familiarity was revealed post-intervention. Implementation of sleep-wake cycles was not statistically significant.

Discussion: Delirium education tailored to the caregiver through video format could be effective in improving a caregiver's knowledge and experience of delirium, as well as strengthening partnership with healthcare providers in formation of a holistic care plan. Caregiver interest and participation was a significant barrier that will require further investigation.

Conclusion: This project provides insight into the value of introducing delirium education and prevention in the ED setting through caregiver partnership. Further studies are needed to understand the impact of caregiver education on patient outcomes throughout hospitalization.

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The support, guidance, and mentorship I have received over the past four years is the reason I have accomplished this degree. My words fall short, but I am grateful, humbled, and appreciative to all who been a part of this journey.

Dedication

"Do not go where the path may lead, go instead where there is no path and leave a trail." – Ralph Waldo Emerson

This is a quote my mom and dad have read to me since middle school. They have believed in me more than I could ever believe in myself. Their love, support, counseling, wisdom, patience, and grace is the reason I am who I am today. During a very challenging four years, it was my parents who were my rock through it all. They answered phone calls, early and late. They drove to Lexington often to help with whatever was needed. They were accommodating and patient with my difficult schedule. It is our time spent talking about life at the kitchen island over good coffee that is my favorite.

It is because of my mom and dad that I had the courage to forge my own path and follow this journey in Kentucky. That is why this project is dedicated to them. Thank you, Mom and Dad!

Table of Contents

Abstract………………………………………………………………………………... 1

Acknowledgements……………………………………………………………………… 3

Dedication………………………………………………………………………………... 5

Background and Significance ………………………………………………………… 9

Problem Statement……………………………………………………………… 9

Context, Scope, and Consequences of the Problem………………………………… 9

Current Evidence-Based Interventions Targeting the Problem……………………… 10

Purpose………………………………………………………………………………... 11

Objectives………………………………………………………………………… 11

Literature Search……………………………………………………………………… 12

Search Strategy………………………………………………………………… 12

Synthesis & Summary of Evidence…………………………………………….. 12

Support for Proposed Practice Change & Gap Identification……………………….. 14

Theoretical Framework……………………………………………………………….. 14

Methods……………………………………………………………………………….. 15

Study Design…………………………………………………………………… 15

Setting………………………………………………………………………... 15

Agency Description………………………………………………………… 15

Congruence of Project to Agency's Mission…………………………………... 16

Stakeholders………………………………………………………………… 16

Potential Site-Specific Facilitators and Barriers to Implementation……………... 16

Sample……………………………………………………………………….. 17

Target Population with Inclusion and Exclusion Criteria………………………... 17

Procedure…………………………………………………………………….. 18

IRB Submission Process…………………………………………………….. 18

Description of Evidence-Based Intervention………………………………... 18

Measures and Instruments…………………………………………………... 19

Data Collection……………………………………………………………… 19

Data Analysis……………………………………………………………….. 20

Results…………………………………………………………………………… 20

Demographics……………………………………………………………….. 20

Knowledge, Confidence, and Behavior Change…………………………….. 21

Association Between Demographics and Outcomes………………………… 21

Discussion……………………………………………………………………….. 22

Implications for Practice, Education, Policy, Research and Cost………………….. 25

Practice and Cost…………………………………………………………………... 25

Education…………………………………………………………………………….. 26

Policy and Research……………………………………………………………….. 27

Limitations……………………………………………………………………. 27

Conclusion……………………………………………………………………. 28

References……………………………………………………………………….. 29

List of Appendices………………………………………………………………. 8

List of Tables……………………………………………………………..……… 8

List of Appendices

Appendix 1: Cover Letter……………………………………………………………….34

Appendix 2: Learning Objectives……………………………………………………….36

Appendix 3: Pre- and Post-Survey………………………………………………………37

List of Tables

Table 1: Table of Study Measures………………………………………………………40

Table 2: Demographics…………………………………………………………………..41

Table 3: Changes in Knowledge, Confidence, and Behavior Change Before and After the Educational Intervention……………………………………………………………………42

Table 4: Correlations Among Demographic and Outcome Variables…………………...43

Table 5: Mean Scores of Outcome Variables Among Males and Females……………...44

Background and Significance

Problem Statement

The problem of focus pertains to the lack of caregiver involvement in early screening, recognition, and interventions for acute confusion and delirium in older adults (age 65y+) boarding in the Emergency Department (ED) setting. As boarding rates continue to rise, current ED models do not engage caregivers in early delirium recognition or treatment. Involving caregivers, defined as the patients' family member or supportive personnel at bedside, at the time of admission enhances non-pharmacologic treatment modalities and reduces healthcare resource burdens.

Context, Scope, and Consequences of the Problem

Emergency Department (ED) crowding is a global healthcare crisis due to the multifaceted negative impacts on patient outcomes, resource availability, and interruption in the healthcare delivery system (Rasouli et al., 2019). Overcrowding and boarding impacts rural and urban EDs of all sizes and is notably severe throughout healthcare systems in North America, Europe, and Australia (Morley et al., 2018). Specifically, the Joint Commission on Accreditation of Hospitals reveals that in 2020 and 2021, 88.9% of US hospitals exceeded the 4-hour boarding time standard, which had a negative impact on patient and family satisfaction scores (Janke et al., 2022). Boarding is associated with higher healthcare costs, prolonged length of stay, and increased mortality, all of which are further compounded by delirium (Mosello et al., 2020; Rasouli et al., 2019).

At the individual patient population level, older adults accounted for 43 per 100 ED patient visits in 2017, representing an average of 29 million patient encounters annually (Ashman et al., 2020). Deemed a "quiet epidemic," there is a growing concern for delirium prevalence in

7-10% of older adults that begins within the ED setting. ED delirium is notable for higher mortality, accelerated functional decline, increased hospital-acquired complications, increased costs, and increased length of stay. In the US, the financial strain of delirium ranges from 38 to 152 billion dollars each year for patients (Chen et al., 2022). For patients who develop delirium in the ED setting, average length of hospital stay is shown to increase by 4.4 days (Emond et al., 2018). Additionally, a longitudinal study found that acute delirium increased the likelihood of need for psychiatric care and skilled nursing facility placement post-hospitalization with a devastating 58% 3-year mortality rate (Schnorr et al., 2022).

Literature suggests that delirium remains undetected in 57-83% of cases due to the lack of adequate screening, scarcity of resources from the demands of the ED environment, and lack of family/caregiver involvement in providing insight to baseline mental status (Han et al., 2013; Mosello et al., 2020). Evidence demonstrates that acute hospital delirium is a source of stress for caregivers with negative consequences on length of stay, disposition, and rates of rehospitalization; however, caregiver involvement can lead to early insight, detection, and prevention of negative outcomes (Mossello et al., 2020).

Current Evidence-Based Interventions Targeting the Problem

The most widely adopted evidence-based screening tool includes the Confusion Assessment Method (CAM) and CAM-ICU tool. An adapted version, Family Confusion Assessment Method (FAM-CAM), exists to involve family members and/or caregivers in delirium recognition (Mailhot et al., 2020). The CAM assessment tool is considered to have a superior sensitivity and specificity within the acute setting; however, it takes approximately 10 minutes to complete, rendering it impractical in the ED setting (Han et al., 2013). Positive screening results prompt pharmacologic and non-pharmacologic evidence-based interventions that focus on the patient without specific caregiver consideration (Han et al., 2013; Mailhot et al., 2020; Silva et al., 2020). Family presence and involvement is only prioritized upon reach of moderate to severe delirium, primarily in the intensive care setting where there is greater resource distribution (Han et al., 2013).

Purpose

This project intended to explore the effect of an educational session designed to engage caregivers in the prevention of clinical delirium for older adults boarding the ED setting. The intervention was tailored to the caregiver's knowledge, confidence, and behavioral change pertaining to delirium recognition and implementation of preventative nonpharmacologic interventions. Literature offers thorough education and support for evidence-based delirium screening tools and nonpharmacologic interventions executed by healthcare providers, specifically in the ICU. However, a gap exists within the arena of understanding the role of the caregiver when involved in implementation of delirium precautions for at-risk patients in the early stages of hospitalization and ED boarding. Currently, there is insufficient evidence to explain how education can optimize caregiver involvement in bedside care. The objectives for this project follow. Specific learning objectives are detailed in Appendix 2.

Objectives

1. *Knowledge:* Following an educational video presentation, 75% of caregivers will accurately identify delirium risk factors, preventative measures, and delirium examples in case scenarios.
2. *Confidence:* Following an educational video presentation, 75% of caregivers will report confidence in their ability to recognize delirium and discuss it with the healthcare team.

3. *Behavior:* Following an education video presentation, 50% of caregivers will report their likelihood of performing three specific behaviors to prevent delirium.

Literature Search

Search Strategy

A literature search was performed to explore the current, evidence-based solutions to approaching delirium in the ED. The PICOT question guiding the search was: In caregivers of older adults admitted in the emergency department, does education pertaining to delirium recognition and prevention, compared to no educational intervention, improve caregiver knowledge, confidence, and behavior surrounding delirium-conscious care during ED boarding? PubMed and CINAHL databases were searched for peer-reviewed, academic research articles written within the last 10 years. Key words included: delirium, family, caregiver, emergency department, screening, and CAM. Full search phrases included: "caregiver AND delirium AND education," "knowledge AND caregiver AND delirium." Articles included were those performed both in the US and other countries, as well as systematic reviews and meta-analyses. Exclusion criteria included articles pertaining to patients less than 60 years of age. A total of 63 articles were reviewed with 11 selected for analysis.

Synthesis & Summary of Evidence

Partnership and communication between caregivers and the healthcare team is vital to providing effective delirium care. Partnership is essential to early recognition of the clinical signs of delirium; however, the ability of the caregiver to recognize delirium is dependent upon education and foundational understanding. Current literature recognizes the gap in family involvement due to lack of efficient processes to facilitate education and an integrative, systematic approach (Bull et al., 2015; Bull et al., 2016; Emond et al., 2017).

Moderate strength evidence shows that a balanced partnership between healthcare providers and caregivers is enhanced through use of an appropriate screening tool for optimal delirium detection within the first 36 hours of the ED stay (Emond et al., 2017; Gagne et al., 2018; Shenkin et al., 2019). The Confusion Assessment Method (CAM) currently stands as the gold standard delirium screening tool across multiple practice settings (Bull et al., 2016). With the recent push for family partnership during ED evaluation, research faults the CAM for lack of caregiver insight (Bull et al., 2016). In response, the FAM-CAM was created to promote the caregiver's voice. However, studies fault the FAM-CAM for lack of standardization due to absence of caregiver education and variance in healthcare provider involvement (Mailhot et al., 2020).

Furthermore, current care models lack a standardized protocol and evidence-based format pertaining to delirium education for the caregiver (Carbone et al., 2015; Lee et al., 2020). Carbone and colleagues (2015) conclude that written educational material alone is not effective or meaningful for caregivers. Conversely, a recent study demonstrates that video format education with case vignettes and questionnaires improves delirium knowledge, caregiver recognition, and prevention/management techniques (Krewulak et al., 2020). Building on this video model, the Caregiver Delirium Knowledge Questionnaire (CDK-Q) was derived to assess learning needs and outcomes pertaining to risk factors, complications, and treatment modalities (Bull et al., 2015). The CDK-Q has been implemented in a recent study that utilized a caregiver educational video with findings supportive of video-format education in enhancing caregiver knowledge and presentation of delirium (Wheeler et al., 2023).

With regard to partnership, evidence strongly supports the involvement of family members beyond the standard visitation and presence encouraged in the "ABCDEF" gold-standard care bundle (Bull et al., 2016). High-level evidence presented in two systematic reviews supports care models that educate caregivers to implement nonpharmacologic modalities, including reality orientation, sleep-wake cycles, sensory stimulation, and room familiarity (Carbone et al., 2015; Lee et al., 2020). Family, or caregiver, engagement is a vital element in implementing non-pharmacologic prevention and treatment efforts (Lee et al., 2020). Family members report higher satisfaction, empowerment, and a sense of control upon completion of interventions (Liang et al., 2021).

Support for Proposed Practice Change & Gap Identification

The proposed practice change stems from recognition within the literature that a standard delirium partnership model has yet to be perfected within the acute care setting. This is partly due to the lack of evidence-based delirium education programs for caregivers (Carbone et al., 2015; Lee et al., 2020). Additionally, studies widely acknowledge the absence of a feasible, standardized delirium questionnaire tool designed for caregivers in the ED setting without preceding education (Krewulak et al., 2020). This necessitates the need to focus on efficient and timely caregiver education, rather than a screening tool that does not require education. Furthermore, nonpharmacologic caregiver-driven implementations have limited understanding and focus within the ED setting alone (Lee et al., 2020). With the evolving understanding of delirium incidence for older adults in the ED, it is imperative that practice changes reflect specific elements within the ED overcrowding epidemic.

Theoretical Framework

The self-efficacy theory guided this project in its goal to empower caregivers through influential participation and education (Sheeran et al., 2016). This theory is founded upon the correlation of changes in attitude, norms, and self-belief as determinants of intention, behavior, and action (Sheeran et al., 2016). As applied to this project, it was necessary to influence caregiver attitudes and perceptions to instill the belief that caregiver involvement has the potential to positively impact patient care through early detection and implementation of delirium-conscious care. It was postulated that proper promotion of tools for self-efficacy will inspire caregivers to understand and utilize new skills in their ability to prevent delirium. With caregiver knowledge, confidence, and behavior at the forefront of this project, this theory shepherded the design of an educational intervention with a specific focus to inspire not only intention, but true action and change (Bonnel & Smith, 2021).

Methods

Study Design

This project used a quasi-experimental, pre- and post-survey design with the aim to evaluate an experimental intervention without randomization. This specific design was selected to best determine causality between the educational intervention and outcome pertaining to delirium knowledge, confidence, and behavior change in the caregiver. This study included a non-probability sampling approach and did not necessitate randomization or a control group.

Setting

Agency Description

This single-center project took place at UK HealthCare Emergency Department (UK ED) in Lexington, Kentucky. Approval was obtained from the Nursing Research Council at UK HealthCare. This department has approximately 80 beds and 200 adult patient visits per day, offering access to a large and diverse sample size. As part of a Level 1 Trauma Center and academic medical facility with high boarding volumes, this setting supported the opportunity for research and improvement processes pertaining to the aim of this project.

Congruence of Project to Agency's Mission

The mission of UK HealthCare emphasizes "commitment to patient care, education, and research," demonstrating alignment with the goals of this project to further care quality through research initiatives (UK HealthCare, n.d.).

Stakeholders

Stakeholder involvement and support was an invaluable resource for this project. Dr. Patricia Howard, director of the UK ED, has an extensive background in research and supported the project's attention to ED overcrowding. As the former Emergency Nurses Association President, Dr. Howard has published work surrounding the detriment of overcrowding and served as a clinical mentor throughout the project's entirety. Furthermore, the local Kentucky Chapter of Emergency Nurses Association (ENA) brought valued insight to the project; fortunately, members of the ENA Bluegrass chapter work at the project site and were accessible to make recommendations and provide feedback regarding the project, gaps in care, and concurrent research. Additionally, caregivers were key stakeholders through their involvement, investment, and willingness to participate in the program to both help their family member and contribute to the betterment of future healthcare practices.

Potential Site-Specific Facilitators and Barriers to Implementation

Facilitators

As a MAGNET Hospital, UK HealthCare prioritizes research and nursing excellence in effort to provide exceptional quality of care. Furthermore, the UK HealthCare ED leadership team supports opportunities to foster departmental improvement in care processes. As a large unit, this ED is accustomed to implementing system trials with ongoing evaluation and feedback.

This ED also fosters a culture of adaptability with features that will facilitate the implementation of this program.

Barriers

While adaptable and dynamic, barriers existed in the ED regarding the feasibility of project implementation. The ED is a project-saturated department with multiple ongoing trials and doctoral projects currently underway, creating concern for burnout and fatigue in team members accommodating project implementation. Furthermore, this ED is a high census unit with fast turnover, creating inconsistency for boarding times, patient rooming assignments, and visitor accommodations. To overcome the expected challenges, bedside nurses were not included in this study and recruitment times varied.

Sample

Target Population with Inclusion and Exclusion Criteria

The selected sample consisted of a non-probability group of caregivers for a select population of patients boarding in the ED. According to Johns Hopkins Medicine (n.d.), caregivers are defined as those who “tend to the needs or concerns of a person with short or long term limitations.” Caregivers may be biological/legal family members or “family of choice” (Johns Hopkins Medicine, 2023). Caregivers included in this study were those who met the above definition, were above the age of 18 years, designated English as their primary language, and had the capability to be present at the bedside during hospitalization.

Caregivers selected were derived from older adult patients, age 65 or greater, admitted to the hospital medicine service with an ED boarding time of four hours or more. This patient population accounts for the largest admitting care service with a diverse and representative sample of geriatric patients in the acute setting.

Exclusion criteria pertained to caregivers of those requiring intensive care, ED observation status, and patients with neurological conditions that required low environmental stimulation.

Procedure

IRB Submission Process

This project proposal was submitted to the Institutional Review Board for approval to ensure the safety of human subjects. Approval was granted on September 20, 2023 under IRB number 89742.

Description of Evidence-Based Intervention

Regarding population sampling, the UK HealthCare ED Divisional Charge Nurse provided the PI with room numbers of patients 65 years or older admitted to the medicine service line with omission of patient-protected health information. Following, bedside nurses were asked if a caregiver was present. Caregivers were approached by the principal investigator (PI) who described the study using a cover letter and obtained verbal consent for participation (Appendix 1). Following consent, caregivers were presented with a portable, screen-locked tablet offering a link to the pre-survey. After completion of the survey, a 10-minute educational video was shown. This video was developed by the PI and featured a narrated presentation discussing delirium, risk factors, importance of caregiver partnership, and three non-pharmacologic interventions for prevention. The chosen video format was derived from current evidence demonstrating effective caregiver education through video and case study formats (Bull et al., 2016; Krewulak et al., 2020). Non-pharmacologic interventions discussed were evidence-based and customizable to the caregiver role (Carbone et al., 2015; Lee et al., 2020). Next, a brief video from the University of Rochester Medical Center (2016) was played, exemplifying patients demonstrating signs of delirium in the hospital setting. After viewing the videos, the PI opened a second survey link on the tablet for caregivers who wished to complete the post-survey. Caregivers were offered the option of a paper copy of both pre- and post-surveys. In the event of paper completion, participants were provided an envelope in which surveys were confidentially sealed. Paper surveys were entered into the database manually by the PI and stored securely at the office of the project site. The PI remained with the caregiver throughout the entirety of the surveys and intervention.

Measures and Instruments

This project aimed to measure caregiver knowledge, confidence, and behavioral change (Appendix 2). Behavioral change encompassed three individual variable subsets, including implementation of sleep-wake cycles, reality orientation, and environment familiarity. Data were anonymously self-reported by caregivers via an electronic survey format using REDCap on a secure UK server. Knowledge of delirium prevention efforts, confidence in care participation, and perceived behavior change were evaluated through use of "Yes/No" questions and a five-point Likert Scale. The Likert Scale optimized evaluation through positive and negative strength of importance and frequency with linear, measurable data in an ordinal level of measurement (Mcleod, 2023). The pre- and post-intervention questionnaires were identical aside from the demographic survey and open-text feedback box, featured in Appendix 3. Part A is adapted from the CDK-Q featured in current literature, with approval from the original researchers (Bull et al., 2015).

Data Collection

Data were collected via use of two secure REDCap surveys pre- and post-intervention. The surveys were administered via tablet through a REDCap survey weblink, or in paper form, preluded by a cover letter explaining the purpose and aims of the study, anonymity of responses, and freedom of choice in participation with no penalization (Appendix 1). The intervention and data collection took place from October 2023 to December 2023 over the course of 15 site visits performed by the PI. Data from the two surveys were compiled at the completion of the implementation timeframe.

Data Analysis

Data were analyzed both in REDCap and SPSS Software. Specific variables of measure are reflected in Table 1. Analysis was performed for questions pertaining to each of the three categories: knowledge, confidence, and behavior change. Pre- and post-intervention surveys were analyzed through paired-samples t-tests to determine mean and standard deviation (Table 3). Summative scores were utilized for change in knowledge with a potential range of 0-8, while mean scores were applied to change in confidence and behavior with potential ranges of 0-5. Descriptive analyses and inferential statistics were utilized to evaluate the change in variables related to demographics, including age, education, and gender. Spearman's correlation coefficient was utilized to evaluate association between change in knowledge, confidence, and behavior with age and educational level (Table 4). Two sample t-tests were utilized to evaluate if mean outcome scores differed between males and females (Table 5). Pre- and post-intervention data were further analyzed to understand successes, failures, and gaps of the intervention. Assistance from research experts was utilized to ensure thorough and accurate data analysis.

Results

Demographics

A total of 76 caregivers were approached for invitation of participation, with 15 caregivers completing the educational intervention and pre-post surveys in full (Table 2). The sample consisted of 7 males (46.7%) and 8 females (53.3%). The predominant reported race was white (86.7%), along with one non-white (6.7%) and one who preferred not to answer (6.7%). The predominant age category was 70-79 years (33.3%), followed by 18-39 years (20%) and 60-69 years (20%). Education was largely divided, with associate or bachelor's degree reportedly the most common (26.7%), followed by an even distribution amongst high school (20%) and graduate school (20%). Children of the patient accounted for 40% of the sample, while spouse and sibling relations represented 20% each.

Knowledge, Confidence and Behavior Change

Data indicate that the delirium presentation was impactful in enhancing knowledge, confidence, and two of the three components of behavioral change. Knowledge scores increased from 5.2 (SD=1.7) to 6.6 (SD=1.8; p=.009; Table 3). Similarly, confidence scores increased from 10.7 (SD=2.7) to 13.1 (SD=1.8; p=.006). Behavior scores for sleep-wake cycle implementation were not statistically significant despite an increase from 4 (SD=0.8) to 4.3 (SD=0.9; p=.096). Conversely, behavior scores for implementation of reality orientation increased significantly from 2.9 (SD=1.1) to 4.1 (SD=0.8; p<.001). Additionally, behavior scores for implementation of environment familiarity increased from 3.2 (SD=0.8) to 3.9 (SD=0.8; p=.003).

Association Between Demographics and Outcomes

No association was found between change in knowledge and age (r= -.387, p=.15), education (r = .152, p=.59), or gender (p=.32; Tables 4 & 5).

Similarly, no significant association was found between change in confidence and age (r= -.157, p=.58), education (r=.059, p=.84), or gender (p=.76).

There was no significant association with changes in implementation of sleep-wake cycles and age (r= -.269, p=.33), education (r=.158, p=.58), or gender (p=.82). Additionally, there was no significant association between reality orientation behaviors and age (r= -.279, p-.31) or gender (p=.68). Similarly, there was no significant association between change in implementation of environment familiarity and age (r= -.292, p=.29) or gender (p=.89). However, a significant association does exist between education and change in implementation of reality orientation (r=.541, p=.04) and environment familiarity (r=.641, p=.01).

Discussion

In this project, the ability to engage caregivers in a delirium recognition and prevention educational intervention was tested. Results showed that the educational video intervention significantly impacted caregiver knowledge, confidence, and behavioral change for implementation of reality orientation and environment familiarity; however, caregivers were not significantly influenced to change behaviors related to implementing sleep-wake cycles. It was also revealed that the impact of this educational session was not impacted by participant age or gender; however, implementation of reality orientation and environment familiarity were both impacted by educational background.

Data indicate that following the educational video session, caregivers demonstrated an improved understanding of delirium care for their loved-one. First, caregivers had marked improvement answering delirium knowledge questions pertaining to risk factors, early prevention strategies, and case scenarios differentiating delirium from dementia. Improved understanding of delirium eliminates stress and anxiety for caregivers observing changes in their loved ones (Carbone et al., 2015). Furthermore, caregivers reported higher confidence in their ability to recognize delirium, discuss it with the healthcare team, and prioritize its relevance to the healthcare treatment plan. Improving knowledge and confidence fosters partnership between healthcare providers and caregivers. This partnership allows for a holistic and systematic approach to care, which is known to be effective in preventing and treating delirium (Bull et al., 2015; Bull et al., 2016; Liang et al., 2021). Caregivers, especially spouses and children, strongly prefer to be included in care and have greater satisfaction when interacting and contributing to the care plan (Carbone et al., 2015; Wheeler et al., 2023).

Furthermore, data support that the educational video influenced caregivers to make behavioral changes. Following the intervention, caregivers reported a significant increase in behavior change for implementation of both reality orientation and environment familiarity, which are two non-pharmacologic interventions known to prevent and treat delirium (Carbone et al., 2015; Liang et al., 2021). The only behavioral change measure not significantly impacted was related to practicing sleep-wake cycles. It remains unknown whether this was due to an educational deficit within the video or perceived feasibility by the caregiver in the specific ED setting. Currently, earplugs are an alternative strategy utilized by family members to promote sleep (Liang et al., 2021). However, sleep in the ED is viewed as a challenge and family members often ask for medication aids (Lee et al., 2020).

Caregivers who wish to participate in care comprise a variety of ages and relationships to patients (Wheeler et al., 2023). Therefore, it was imperative that this educational intervention be generalizable and relatable for all demographic groups. The demographic characteristics of this sample provided insight that knowledge retention and confidence did not decrease as participant age increased. This is critical, as spouses of patients are the most likely to experience distress related to delirium (Carbone et al., 2015). Additionally, knowledge and confidence scores showed no significant difference between males and females. However, there was an association indicating that participants with a higher educational background were more likely to implement reality orientation and environment familiarity. It is necessary to understand whether the health language literacy of the video impacted this.

Caregiver involvement in delirium care remains a barrier. Seventy-six caregivers were approached and invited to participate in the study. Only 15 of those caregivers consented and completed the intervention and surveys. Though the prospect of participation in research may have been a deterrent, many caregivers were uninterested in the topic or felt it was irrelevant to their loved one. It was observed that many caregivers would ask what delirium means and invite discussion but be unwilling to consent for research. It was also observed that some caregivers were displeased at the mention of delirium, which may be attributable to the negative connotation and confusion surrounding the word (American Delirium Society, 2023). Additionally, many asked if delirium and dementia were similar.

Although requested, no feedback was provided in the post-survey open ended question (see Appendix 3). However, many who participated expressed verbal feedback to the PI that this project was helpful and explained changes that they noticed in their loved one throughout hospitalization. One participant shared that they would bring back personal items during their next visit. Another participant shared that this experience explained events they had witnessed during a previous hospitalization. Despite the known benefit of caregiver partnership in delirium recognition and prevention in the ED setting (Lee et al., 2020), caregiver buy-in and interest proved difficult to obtain in the consent process. This emphasizes the need to bolster strategies to engage caregivers and lessen stigma surrounding the topic to increase involvement in educational sessions.

In consideration of the intervention design, it was important to create an educational intervention that could influence the variables of interest, but also be presented in a format both attainable and meaningful to caregivers. Written material is often discarded or ignored and does not inspire attention or provoke knowledge retention (Carbone et al., 2015; Wheeler et al., 2023). However, this video style format was feasible and attainable in engaging caregivers (Krewulak et al., 2020).

This project emphasizes the ability to proactively engage caregivers in delirium partnership during the early stages of admission and boarding in this department (Lee et al., 2020). Literature supports early recognition and caregiver partnership within the ED setting (Bull et al., 2016), but lacks definitive and evidence-based educational interventions. Within the UK HealthCare ED, this educational intervention is a feasible and time-efficient tool that could be implemented for caregivers in the future. It is anticipated that participation would increase if implemented beyond the research stage. It is also expected that this intervention may enhance the caregiver's healthcare experience and perception of involvement during the boarding experience (Liang et al., 2021).

This project provided insight into the feasibility of a generalizable educational intervention for caregivers in the ED setting. Data support the ability to positively impact, educate, and equip caregivers with the ability to recognize and prevent delirium in their loved ones. This project also highlights areas that require improvement, including caregiver buy-in and participation. With improvement in knowledge, confidence, and behavior change, it is reasonable to further pioneer this education as a sustainable component of practice.

Implications for Practice, Education, Policy, Research and Cost

Practice and Cost

Forward-looking, a plan for video distribution is required to implement this intervention as a sustainable component of practice. By design, this video should be played at least once for caregivers present at the bedside of patients boarding in the ED. Integration into practice must be of minimal burden and reliance on nursing staff. Currently, televisions in the ED where the intervention was implemented do not have the same education platform as inpatient rooms and cannot be pre-programmed with this video. This could be mitigated by integration of inpatient health education services on the ED televisions to eliminate the need for nurses to manually play the video. Alternatively, a QR code or weblink could be utilized, but would miss an important portion of visitors who may not utilize mobile technology.

With respect to cost implications, a video-formatted educational intervention is of minimal up-front cost and can be reproduced and distributed on a mass scale. This achieves a low-cost burden with respect to reach and usage. However, additional cost considerations include integration of technology platforms in the ED and ongoing technology support. With respect to justifying up-front capital, future considerations indicate that this intervention has the potential to prevent and reduce delirium, which can decrease hospital-acquired complications and improve reimbursement. Literature emphasizes the complications that delirium potentiates, including increased length of stay and 3-year mortality rates (Chen et al., 2022; Emond et al., 2018; Schnorr et al., 2022), all of which negatively impact CMS reimbursement and hospital metrics. In translation, this educational intervention is of low cost with potential for great impact on patient outcomes, caregiver satisfaction, and reimbursements.

Education

ED nurses would need to complete annual competencies demonstrating an understanding of delirium risk and preventative strategies for boarding patients to support the efforts of the intervention. ED nurses would also need to watch the video once and be able to participate in discussion and answer any caregiver questions pertaining to the three interventions. Additionally, ED nurses would need additional training on how to chart delirium prevention strategies in the electronic health record. This would require support and engagement from patient care managers and staff development specialists to manage this as an ongoing annual competency.

Policy and Research

As ED boarding rates continue to burden the quality of care in the early admission process, it is imperative to push forward with innovative strategies for education and prevention through policy. In 2018, Centers for Medicaid and Medicare (CMS) set forth new Quality Reporting Program guidelines proposing implementation of the CAM assessment for hospitalized patients (CMS, 2017). However, this remains unenforced, and delirium is not clearly defined as a reimbursable component or complication of care under CMS. It is unknown if reimbursement related to ED boarding is adequately matching the services provided (Canellas et al., 2021). Therefore, a legislative push within Kentucky is needed to support EDs as they expand patient and family education services in the setting of extreme care demands. Financially, governing healthcare institutions should support the infrastructure to provide education to patients and caregivers in the ED setting as boarding times continue to rise.

Limitations

Sample size and reluctance for participation were the most notable limitations of this project. While the goal sample size of 75 caregivers was approached, minimal participation impacted the ability to collect and thoroughly analyze data. While significance of the variables was able to be analyzed, inferential statistics pertaining to demographic correlations were limited. Efforts were made to be available to caregivers at convenient and requested times; however, the resistance to delirium education in conjunction with delirium incidence speaks to the pertinence of this project and topic. Other limitations pertain to time and resource constraints with only one PI offering this project invitation to caregivers. Additionally, interruptions occurred in the care setting that impeded caregiver willingness to participate. This included rounds, room movement, patient events, phone calls, etc. A design limitation of this project pertains to the inability to follow patient outcomes due to ethical consent. Achieving consent from both patients and caregivers would have limited the feasibility of this project in the allotted timeframe. Additionally, bedside nurses were not aware of this project and were unable to follow up on patient outcomes or caregiver concerns.

Conclusion

The purpose of this project was to empower caregivers in the prevention of clinical delirium for their loved ones boarding in the ED setting. With hopes to impact delirium recognition and prevention strategies, the project was tailored to caregiver impact in attempt to understand reach, feasibility, and caregiver partnership within the ED.

This educational intervention accomplished the goal to positively influence caregiver knowledge, confidence, and behavior change. Following the video, caregivers had improved delirium knowledge pertaining to risk factors, prevention strategies, and case scenarios. Additionally, caregivers reported improved confidence in recognizing and discussing delirium with the healthcare team. Finally, caregivers were more likely to implement reality orientation and environment familiarity techniques. However, caregivers were not more likely to implement sleep-wake cycles. While the educational intervention had no association with age or gender, there was an association between educational level and implementation of reality orientation and environment familiarity.

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Appendix 1

Cover Letter

To Potential Research Participant:

Researchers at the University of Kentucky are inviting you to take part in a survey about caregiver knowledge of delirium for patients in the emergency department awaiting an admission room. As the caregiver and visitor to your loved-one, your insight and participation in their care is invaluable. This project aims to educate caregivers on delirium that can occur during the early hospitalization process in the emergency department. As defined by the American Delirium Society, delirium is the sudden onset of confusion, lasting hours to days, and can be related to functional distress, loss of independence, and functional decline. From this survey, we hope to learn how to promote your voice and insight, as you know your loved-one best. Thank you for your consideration of participation in this project, titled "Empowering Caregivers in the Prevention of Clinical Delirium for At Risk Older Adults Boarding in the Emergency Department Setting."

Although you may not get personal benefit from taking part in this research study, your responses may help us understand more about how to best educate and actively involve caregivers in bedside care designed to prevent delirium. Some volunteers experience satisfaction from knowing they have contributed to research that may possibly benefit others in the future.

If you do not want to be in the study, there are no other choices except not to take part in the study.

The two surveys will take about 10 minutes to complete with a 5 minute video in-between.

Although we have tried to minimize this, some questions may make you upset or feel uncomfortable and you may choose not to answer them. If some questions do upset you, we can tell you about some people who may be able to help you with these feelings.

Your responses to the surveys are anonymous, which means no names, IP addresses, or any other identifiable information will be collected with the survey responses. We will not know which responses are yours if you choose to participate.

We hope to receive completed surveys from about 75 people, so your answers are important to us. Of course, you have a choice about whether or not to complete the surveys, but if you do participate, you are free to skip any questions or discontinue at any time. You will not be penalized in any way for skipping or discontinuing the surveys.

Please be aware, while we make every effort to safeguard your data once received on our servers via REDCap, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while still en route to us.

If you have questions about the study, please feel free to ask; my contact information is given below.

Thank you in advance for your assistance with this important project. To ensure your responses/opinions will be included, please electronically submit or hand in the sealed paper copy containing your completed survey/questionnaire within one hour.

Sincerely,

Danielle Brewer
College of Nursing, University of Kentucky
PHONE: 859-323-5108
E-MAIL: dabr245@uky.edu

An additional point of contact is my faculty advisor, Dr. Jean Edward.
E-MAIL: jean.edward@uky.edu

If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428.

Appendix 2

Learning Objectives

Knowledge

1. Caregiver will correctly identify delirium risk factors related to the acute care setting.
2. Caregiver will correctly identify behaviors effective in decreasing risk for and early detection of delirium.
3. Caregivers will correctly identify presence or absence of delirium in provided patient case-scenarios.

Confidence

1. Caregivers will report confidence in identifying acute clinical delirium risk factors and signs/symptoms in the hospitalized older adult.
2. Caregivers will report confidence in discussing acute clinical delirium with the healthcare team.
3. Caregivers will rate perceived importance in preventing and treating delirium during hospitalization.

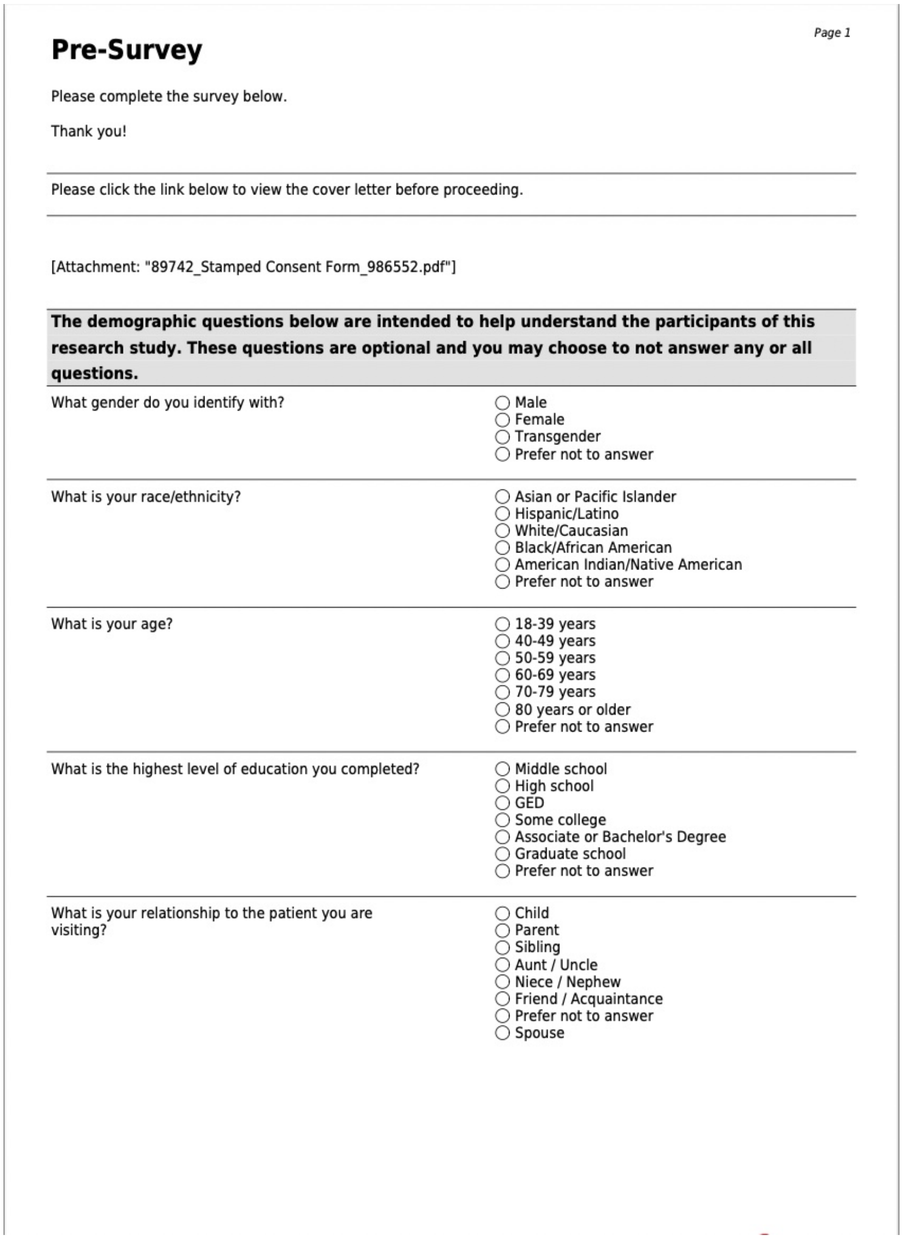
Behavior

1. Caregivers will report likelihood to promote sleep-wake cycles throughout hospitalization.
2. Caregivers will report likelihood to provide reality orientation for their associated patient throughout hospitalization.
3. Caregivers will report likelihood to familiarize environment for their associated patient throughout hospitalization.

Appendix 3

Pre- and Post-Survey

- The first photo represents the demographic survey on the Pre-Survey.
- The pre- and post-surveys are otherwise identical with the exception of the open-ended text box for feedback in the post-survey, shown in part C.



Page 1

Pre-Survey

Please complete the survey below.

Thank you!

Please click the link below to view the cover letter before proceeding.

[Attachment: "89742_Stamped Consent Form_986552.pdf"]

The demographic questions below are intended to help understand the participants of this research study. These questions are optional and you may choose to not answer any or all questions.

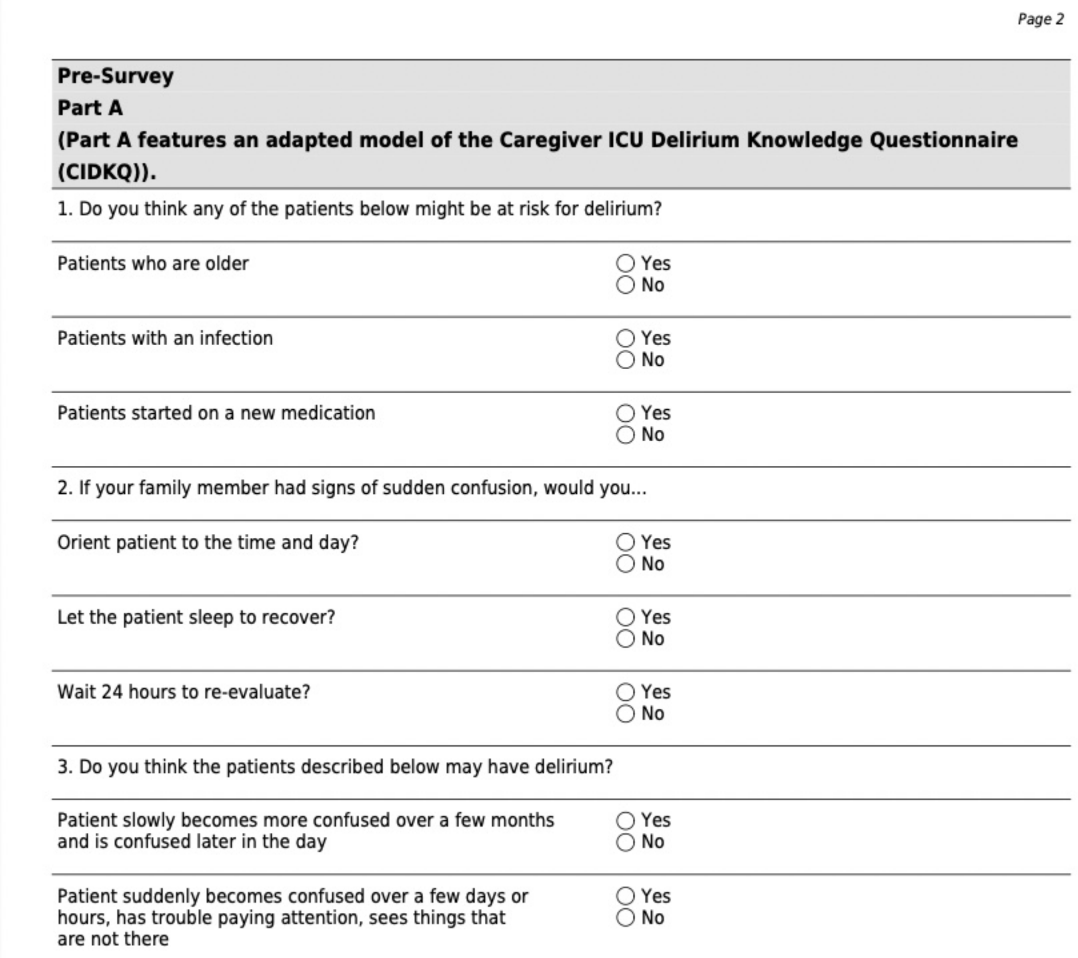
What gender do you identify with?
○ Male
○ Female
○ Transgender
○ Prefer not to answer

What is your race/ethnicity?
○ Asian or Pacific Islander
○ Hispanic/Latino
○ White/Caucasian
○ Black/African American
○ American Indian/Native American
○ Prefer not to answer

What is your age?
○ 18-39 years
○ 40-49 years
○ 50-59 years
○ 60-69 years
○ 70-79 years
○ 80 years or older
○ Prefer not to answer

What is the highest level of education you completed?
○ Middle school
○ High school
○ GED
○ Some college
○ Associate or Bachelor's Degree
○ Graduate school
○ Prefer not to answer

What is your relationship to the patient you are visiting?
○ Child
○ Parent
○ Sibling
○ Aunt / Uncle
○ Niece / Nephew
○ Friend / Acquaintance
○ Prefer not to answer
○ Spouse



Page 2

Pre-Survey
Part A
(Part A features an adapted model of the Caregiver ICU Delirium Knowledge Questionnaire (CIDKQ)).

1. Do you think any of the patients below might be at risk for delirium?

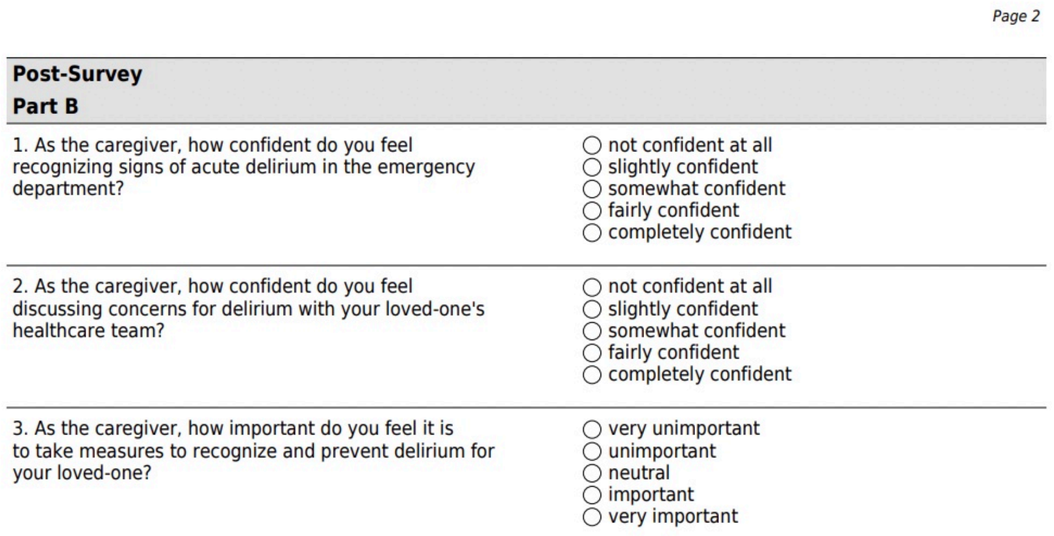
Patients who are older	○ Yes ○ No
Patients with an infection	○ Yes ○ No
Patients started on a new medication	○ Yes ○ No

2. If your family member had signs of sudden confusion, would you...

Orient patient to the time and day?	○ Yes ○ No
Let the patient sleep to recover?	○ Yes ○ No
Wait 24 hours to re-evaluate?	○ Yes ○ No

3. Do you think the patients described below may have delirium?

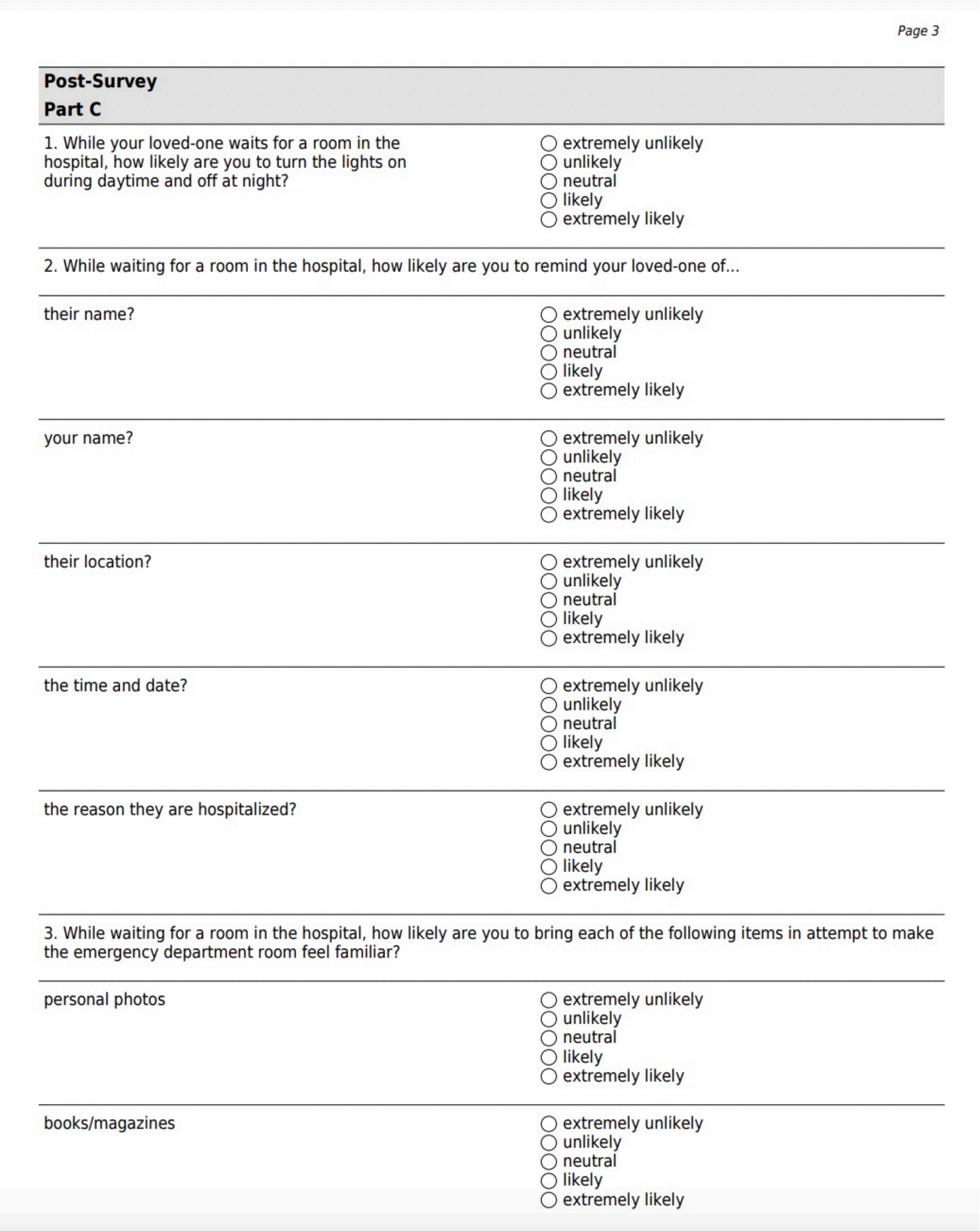
Patient slowly becomes more confused over a few months and is confused later in the day	○ Yes ○ No
Patient suddenly becomes confused over a few days or hours, has trouble paying attention, sees things that are not there	○ Yes ○ No



Page 2

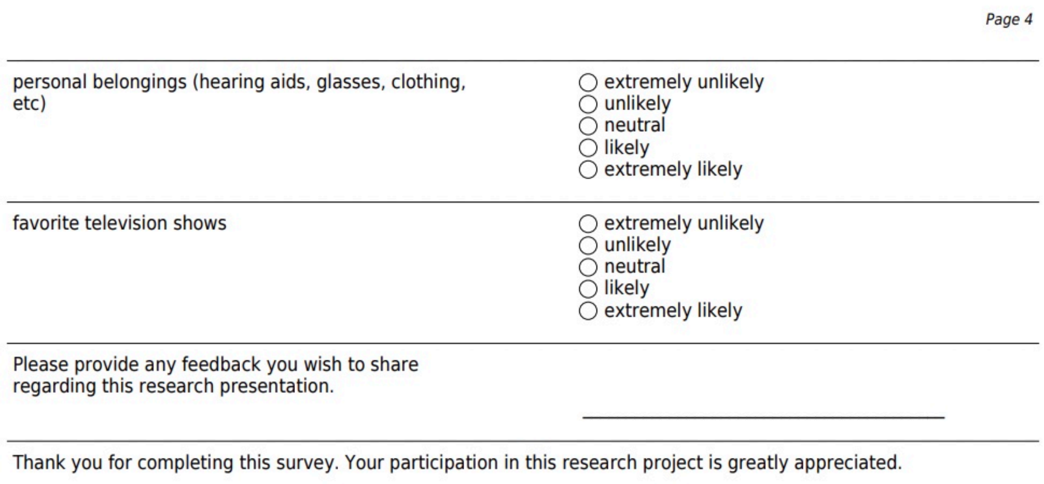
Post-Survey
Part B

1. As the caregiver, how confident do you feel recognizing signs of acute delirium in the emergency department?	○ not confident at all ○ slightly confident ○ somewhat confident ○ fairly confident ○ completely confident
2. As the caregiver, how confident do you feel discussing concerns for delirium with your loved-one's healthcare team?	○ not confident at all ○ slightly confident ○ somewhat confident ○ fairly confident ○ completely confident
3. As the caregiver, how important do you feel it is to take measures to recognize and prevent delirium for your loved-one?	○ very unimportant ○ unimportant ○ neutral ○ important ○ very important



Post-Survey
Part C

1. While your loved-one waits for a room in the hospital, how likely are you to turn the lights on during daytime and off at night?	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
2. While waiting for a room in the hospital, how likely are you to remind your loved-one of...	
their name?	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
your name?	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
their location?	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
the time and date?	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
the reason they are hospitalized?	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
3. While waiting for a room in the hospital, how likely are you to bring each of the following items in attempt to make the emergency department room feel familiar?	
personal photos	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
books/magazines	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely



personal belongings (hearing aids, glasses, clothing, etc)	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
favorite television shows	○ extremely unlikely ○ unlikely ○ neutral ○ likely ○ extremely likely
Please provide any feedback you wish to share regarding this research presentation.	____________________

Thank you for completing this survey. Your participation in this research project is greatly appreciated.

Table 1

Table 1. Table of Study Measures

Measures	Description	Level of Measurement	Data Source
Caregiver Demographics			
Gender	Male, Female, Transgender	Nominal	Survey Questionnaire
Ethnicity	Asian or Pacific Islander, Hispanic/Latino, White/Caucasian, Black/African American, American Indian/Native American	Nominal	Survey Questionnaire
Age	Years: 18-39, 40-49, 50-59, 60-69, 70-79, 80+	Interval/Ratio	Survey Questionnaire
Educational Level	Middle school, High school, GED, some college, Associate or Bachelor's, Graduate School	Ordinal	Survey Questionnaire
Relationship	Child, Parent, Sibling, Aunt/Uncle, Niece/Nephew, Friend/Acquaintance, Spouse	Nominal	Survey Questionnaire
Caregiver Knowledge			
Risk Factors	Correctly identify delirium risk factors	Nominal	Survey Questionnaire
Prevention Action	Correctly select appropriate behavior for prevention	Nominal	Survey Questionnaire
Delirium Detection	Correctly identify delirium scenario	Nominal	Survey Questionnaire
Caregiver Confidence			
Delirium Recognition	Reports confidence in recognizing signs/symptoms of acute delirium	Nominal	Survey Questionnaire
Healthcare Team Discussion	Reports confidence in discussing delirium with healthcare professionals	Nominal	Survey Questionnaire
Presence of Delirium	Reports perceived importance of preventing and treating delirium	Nominal	Survey Questionnaire
Caregiver Behavior			
Promotion of Sleep-Wake Cycles	Reports frequency of behavior of light controls to promote sleep-wake cycles	Nominal	Survey Questionnaire
Performance of Reality Orientation	Reports frequency of performing reality orientation	Nominal	Survey Questionnaire
Promotion of Environment Familiarity	Reports frequency of updating environment for familiarity	Nominal	Survey Questionnaire

Table 2

Table 2. Demographics (N=15)

Variable	**Frequency**	**Percent (%)**
Sex		
Male	7	46.7
Female	8	53.3
Race / Ethnicity		
White/Caucasian	13	86.7
Black/African American	1	6.7
Prefer Not to Answer	1	6.7
Age (years)		
18-39	3	20
40-49	2	13.3
50-59	2	13.3
60-69	3	20
70-79	5	33.3
Education		
Middle School	1	6.7
High School	3	20
GED	2	13.3
Some College	2	13.3
Associate or Bachelor's Degree	4	26.7
Graduate School	3	20
Relationship		
Child	6	40
Spouse	3	20
Sibling	3	20
Niece / Nephew	1	6.7
Friend / Acquaintance	1	6.7
Prefer Not to Answer	1	6.7

Table 3

Table 3: Changes in Knowledge, Confidence, and Behavior Change Before and After the Educational Intervention (N=15)

	Potential Range	**Pre-Education Mean (SD)**	**Post-Education Mean (SD)**	**Significance (*p*)**
Knowledge	0-8	5.2 (1.7)	6.6 (1.8)	.009
Confidence	3-15	10.7 (2.7)	13.1 (1.8)	.006
Behavior Change				
Sleep-Wake Cycles	1-5	4 (0.8)	4.3 (0.9)	.096
Reality Orientation	1-5	2.9 (1.1)	4.1 (0.8)	<.001
Environment Familiarity	1-5	3.2 (0.8)	3.9 (0.8)	.003

Table 4

Table 4: Correlations Among Demographic and Outcome Variables (N=15)

	Knowledge *rho (p)*	Confidence *rho (p)*	Sleep-Wake Cycles *rho (p)*	Reality Orientation *rho (p)*	Environment Familiarity *rho (p)*
Age	-.387 (.15)	-.157 (.58)	-.269 (.33)	-.279 (.31)	-.292 (.29)
Education	.152 (.59)	.059 (.84)	.158 (.58)	.541 (.04)	.641 (.01)

Table 5

Table 5: Mean Scores of Outcome Variables Among Males and Females (N=15)

	Potential Range	Male *Mean* (SD)	Female *Mean* (SD)	*p*
Knowledge	0-8	2 (2.0)	1.0 (1.77)	.32
Confidence	3-15	2.14 (3.53)	2.63 (2.39)	.76
Sleep-Wake Cycles	1-5	.29 (.76)	.38 (.74)	.82
Reality Orientation	1-5	1.37 (.92)	1.15 (1.09)	.68
Environment Familiarity	1-5	.64 (.61)	.59 (.77)	.89