2-2024

The Relationship Between Cognitive Impairment in Psychiatric Patients and Readmission Rate to an Inpatient Facility

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by

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Master of Science

in

Clinical Psychology

Florida Institute of Technology

2022

Master of Science

in Educational Psychology

University at Albany

2017

Bachelor of Science

in Psychology and Sociology

University at Albany

2009

A doctoral research project submitted to

the College of Psychology and Liberal Arts of Florida Institute of Technology

in partial fulfillment of the requirements

for the degree of

Doctor of Psychology

in

Clinical Psychology

Melbourne, Florida

February, 2024

We the undersigned committee, having examined the submitted doctoral research project, “The Relationship Between Cognitive Impairment in Psychiatric Patients and Readmission Rate to an Inpatient Facility” by Cherilyn Schuff, M.S. hereby indicate its unanimous approval.

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Abstract

The Relationship Between Cognitive Impairment in Psychiatric Patients and Readmission Rate to an Inpatient Facility

by

Cherilyn Isis Schuff, M.S.

Committee Chair: Patrick J. Aragon, Psy.D.

The primary intention of this study was to further understand the impact of assessing cognitive impairment in psychiatric patients, as a mediating factor on readmission rates. Mild cognitive dysfunction impacts a patient's functional outcomes (Bowie & Harvey, 2006; Davis et al., 2012; Marcantonio, et al., 2001). Little information exists to guide best practices in the treatment of adults with cognitive impairment who are hospitalized for acute conditions (Davis et al., 2012). A cognitive impairment may impact patient prognosis and ability to function outside of a setting focused on stabilization. Neuropsychological testing is a valuable tool in predicting a patient's cognitive potential. However, creating a battery of tests that must be short enough to fit the needs of patients within an inpatient setting, allowing them to demonstrate their ability, while still providing enough information for accurate diagnosis and prognosis is a challenge.

Overall, this study aimed to investigate the utilization of brief cognitive screeners in identifying patients that may be more vulnerable to relapse and readmission. Cognitive impairment was assessed utilizing the Montreal Cognitive Assessment (MoCA). Readmission rate is defined by total admissions per individual patient. The use of community resources, such as medication management, case management, housing programs, and their relationship with readmission rates was examined. Archival data was taken from an inpatient facility's HIPAA-

compliant electronic medical record (EMR) database. All personal identifying information was de-identified to ensure minimal risk of breaching confidentiality.

Although all objectives demonstrated significant correlations among the variables, there were no significant predictive models. This study found a positive linear relationship between admission rate and a higher MoCA score. This may partially be explained by Age (M = 69.09, SD = 8.25) having a negative relationship with inpatient readmission rate and a positive relationship with community resources. Within the inpatient setting, patients with higher cognitive functioning may be more aware of their mental health symptoms and are more likely to seek help. This may lead to more frequent admissions as they are able to seek help to address their mental health concerns. The relationship between patient demographics, community resource usage, and readmission rate was also examined.

Limitations of this study included the use of archival data, a small sample size, and a lack of diversity within the sample. Future directions for research include norming the MoCA for psychiatric populations and examining deficit patterns within the cognitive domains.

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Dedication

To the Unsung Heroes of Resilience,

This dissertation is dedicated to the courageous individuals who, from within the confines of psychiatric hospitals, have illuminated the path towards understanding, compassion, and healing amidst the challenges of mental health.

To the patients in psychiatric hospitals,

Your journeys, marked by courage, hope, and relentless determination, have been the guiding stars that illuminate the pages of this work. In your vulnerability, you have taught us the profound importance of understanding, compassion, and the boundless strength that resides within each of us.

In the often-overlooked corridors of psychiatric hospitals, you have imparted the importance of understanding the complexities of the human mind and experience. Your stories have cast a spotlight on the urgent need to challenge stigma, improve mental health care, and foster a world where mental health challenges are met with compassion and support.

As you embark on your path to recovery, please know that you are not alone. You have a community of supporters, advocates, and allies who stand beside you, unwavering in their commitment to your well-being.

This dissertation is a humble testament to your strength and a pledge to continue to work tirelessly toward a future where mental health is a shared priority. Your strength is a beacon of hope, guiding us to a brighter more compassionate future.

With deepest admiration, respect, and heartfelt wishes for your continued journey toward healing,

Cherilyn Schuff

Acknowledgements

I would like to extend my deepest gratitude to the exceptional individuals who have been the cornerstone of my academic journey and the completion of this dissertation. Your unwavering support, guidance, and belief in me have been the driving force behind each significant milestone.

I'd first like to thank my chair, *Dr. Patrick Aragon.* Your mentorship, encouragement, and voice of reason have been a guiding force not only through this dissertation process, but throughout the entirety of my doctorate. Your guidance and support consistently lead to exceptional training and success, fostering a culture of kindness among future psychologists.

To my esteemed dissertation committee, *Dr, Vida Tyc*, and *Dr. Meridith Carroll*, your expertise, wisdom, and dedication to my academic growth have been invaluable. Your thoughtful feedback, and commitment to excellence have profoundly shaped this dissertation. Thank you, *Dr. Carroll,* for your wealth of knowledge and readiness to help. Thank you, *Dr. Tyc,* for your hard work, keeping me laughing, and always being a bright spot throughout my time in this program.

To *Steve Lord, Ed,S,* and the hospital that generously allowed me to collect data, your assistance and cooperation were essential to the realization of this study. Your commitment to advancing healthcare knowledge is commendable and I am thankful that you are here to take care of this underserved area.

I am grateful for the inspiration, guidance, and always steadfast encouragement that my on-site supervisor *Dr. Tegan Lesperance* provided. Thank you, *Dr. L*, for showing me the type of psychologist that I aspire to become one day.

Thank you to my best friend of 24 years, *Rachel*. You are easily the most resilient, supportive person that I have ever known. Our shared moments of respite provided solace and motivation throughout the demanding phases of this academic journey. I could not have done this, or life in general, without you.

Thank you to my sister and best friend, *Christine,* for always being my confidante, my motivator, and constantly reminding me of my potential. Your embodiment of strength serves as a powerful influence on my own path to success. I cannot fathom navigating life alongside anyone else.

Thank you to my best friend *Allie*. Your unwavering support since the 8th grade has kept me motivated for a lifetime and shaped the person that I am today. I could not have done this without you in my corner.

Thank you to my family, *Mom, Dad, Arnold, Brendan, and Kristen. Y*our unconditional love and encouragement have been a source of strength and have fueled my determination.

Thank you to my three nephews and niece, *Niall, Aiden, Beckett, and Maura.* You are the brightest stars in my life and your curiosity, resilience, and love remind me daily of the significance of the work I undertake and the legacy I aim to leave behind.

To my friends back home in New York, to my Florida friends, and everywhere in between, your friendship and support has added joy to the challenges of graduate studies. I am thankful to you.

Thank you to *Jeannette,* who taught me to always fight for those that need it most.

To my boyfriend, *Stephen,* your love, patience, home-made dinners, constant moments of shared laughter, and steadfast support have been my sanctuary. Your belief in me and our shared commitment to making this world a better, kinder, more accepting place was my guiding light throughout this doctorate. I am so grateful for your love.

To Giles, my faithful dog of 14 years, your loyal companionship and unyielding presence at my side provided unexplainable comfort during late nights of research and writing. You are my heart.

This dissertation is a tribute to the collective efforts and support of my chair and dissertation committee, the hospital and the mentorship of my on-site supervisor, the love of my family and friends, the inspiration from my nephews and niece, the steadfast love of my boyfriend, and the loyalty of my beloved dog. Your contributions have not only enriched this work but also profoundly impacted my personal and academic growth.

It requires a community to train a psychologist, for the wisdom and support of many shape the mind that heals.

The Relationship Between Cognitive Impairment in Psychiatric Patients and Readmission Rates to an Inpatient Facility

Introduction

Inpatient mental health treatment is an essential, life-saving level of care. It aims to stabilize patients that are in crisis, experiencing acute psychiatric conditions with a relatively sudden onset, severe course, or a marked decompensation due to a more chronic condition (American Psychiatric Association, 2003). Given the severity of a patient's presentation, inpatient mental health treatment within a psychiatric hospital is one of the most intensive levels of psychiatric care. These psychiatric facilities are licensed and operated as either state or public psychiatric hospitals, or state-licensed private psychiatric hospitals that primarily provide 24-hour inpatient care (SAMHSA, 2020). They also may also provide 24-hour residential care and/or less than-24-hour care, which is known as outpatient, partial or day hospitalization (SAMHSA, 2020). Treatment is provided in a 24-hour secure locked, medically staffed hospital unit with a multimodal approach (SAMHSA, 2020). Routine psychiatric evaluations by a psychiatrist or nurse practitioner, twenty-four-hour psychiatric nursing care, medication evaluation, and a structured milieu in addition to an individual behavioral plan constitute treatment on the inpatient unit.

Typically, patients are admitted when they are an imminent danger to themselves or others, or they are unable to care for themselves. Sometimes they may be admitted voluntarily for things such as medication adjustment, emotional distress, or related concerns. In either circumstance, it is determined that their psychiatric care or behavioral needs are unmanageable at any available lower levels of mental health care. Common reasons for inpatient psychiatric admission include suicide attempts or threats, drug overdoses, threats of violence, or psychosis

(SAMHSA, 2020). Inpatient admission is intended to only be a few days to a few weeks. Specifically, the law states that a client is to be evaluated within 72 hours of admission, at which time the patient is either allowed to be released, signs in voluntarily, or is evaluated by a minimum of two treatment providers that deem the patient incompetent and unable to sign in voluntarily. To prevent any patient from being kept against their will, all patients with an involuntary status must be allowed to attend mental health court to ensure proper use of patient rights. Inpatient care is designed to be a short stop which removes a patient from a troublesome environment, de-escalating a crisis. This quick intervention is often a vital barrier to loss of life.

Review of Literature

Admission Rates and Inpatient Demographics

There are 1,756 24-hour psychiatric inpatient facilities within the United States (N-MHSS, 2020; SAMHSA, 2020). According to the 2020 National Mental Health Services Survey (N-MHSS), there were only three states that each had 12 or more public psychiatric hospitals; New York, California, and Texas. Of all facilities surveyed by N-MHSS in 2020 that reported having an inpatient population, there were 85,948 total inpatient beds designated for mental health treatment services (N-MHSS, 2020; SAMHSA, 2020). There were 12 states (California, Colorado, Connecticut, Florida, Hawaii, Iowa, Massachusetts, Minnesota, Montana, Nebraska, North Dakota, and Rhode Island) that had an inpatient bed utilization rate of 100% or more, meaning that there were more patients receiving mental health treatment services in inpatient settings than there were inpatient designated beds at any given time (N-MHSS, 2020; SAMHSA, 2020). Of the 77,622 patients who received reported mental health treatment services in inpatient settings in April 2020, 27% were cared for in general hospitals, 38% were treated in public psychiatric hospitals, and 29% were admitted to private psychiatric hospitals (N-MHSS, 2020;

SAMHSA, 2020). Across all facility types, 58% of all patients who received mental health treatment services in inpatient settings in April 2020 were involuntarily admitted for care, 36% of patients were admitted with an involuntary non-forensic (non-criminal) legal status, and 22% were admitted with an involuntary forensic (criminal) legal status (N-MHSS, 2020; SAMHSA, 2020). Public psychiatric hospitals reported the highest proportion of involuntarily admitted patients who received mental health treatment services in inpatient settings (89%) (N-MHSS, 2020; SAMHSA, 2020). The lowest proportions of involuntary patients were reported by residential treatment centers for children (13%) and Veteran's Affair's Medical Centers (27%) (N-MHSS, 2020; SAMHSA, 2020).

Deinstitutionalization, or the movement that advocates for the transfer of psychiatric patients from long-term facilities back to their families or community-based alternatives, has led to changes in the utilization of inpatient units (Shah, Leontieva, & Megna, 2020). Shifts in demographic variables, disease-related, system-based, and economic factors have been observed in the treatment recipients of acute inpatient psychiatric units (N-MHSS, 2020; Shah, Leontieva, & Megna, 2020). There has been an increase in admissions pertaining to patients with neurodevelopmental disorders, substance use disorders, and trauma and stressor-related disorders (N-MHSS, 2020; Shah, Leontieva, & Megna, 2020). The most frequent diagnosis seen within the inpatient population was depressive disorder (29.44 %), followed by schizophrenia spectrum and other psychotic disorders (17.12%), and substance-related and addictive disorders (14.76%) (N-MHSS, 2020; Shah, Leontieva, & Megna, 2020). There was nearly a significant increase in personality disorders (Shah, Leontieva, & Megna, 2020). The use of restraints has also increased significantly ((N-MHSS, 2020; Shah, Leontieva, & Megna, 2020). Shah, Leontieva, & Megna, 2020). Nearly a quarter of all patients were admitted more than one time (Shah, Leontieva, &

Megna, 2020). Similarly, there has been an increase in patients being discharged to another facility (Shah, Leontieva, & Megna, 2020).

In 2020, the mean age of patients admitted to inpatient psychiatric treatment was 40.33 years (median 40, range 18-91 years) (Shah, Leontieva, & Megna, 2020). The most common age range group of patients being admitted was between 36 and 55 years (Shah, Leontieva, & Megna, 2020). Compared to females, males were admitted at a marginally higher rate (51.97%) (Shah, Leontieva, & Megna, 2020). Over 80% of the inpatients were either single, widowed, or divorced (Shah, Leontieva, & Megna, 2020). Unemployment was present in 42.90% of the patients and 30.63% were disabled due to either a chronic mental illness, physical, or medical disability (Shah, Leontieva, & Megna, 2020). The most common aftercare plan is being discharged back to a patient's home or self-care and self-medication management (N-MHSS, 2020; Shah, Leontieva, & Megna, 2020). The typical length of stay ranges from 1 to 136 days, with the median length being 5 days (Shah, Leontieva, & Megna, 2020).

Patients are presenting to inpatient facilities with serious, chronic mental illness or disability, and are in severe psychiatric crisis. They may lack social, occupational, financial, and housing stability, which may obstruct patient progress and contribute to an increase in inpatient readmission rates (N-MHSS, 2020; Shah, Leontieva, & Megna, 2020).

Cognition

Cognition, behavior, and individual potential are firmly interconnected in a cyclical relationship. Cognition influences behavior, and behavior, in turn, can either facilitate or hinder the realization of one's potential. Cognition can be defined as the advanced cortical functions that include thinking, remembering, planning, knowing, and analyzing (Wadley et al., 2008).

Cognitive functioning encompasses attention, memory, psychomotor speed, executive functioning, language, and visuospatial ability. Intact cognition is necessary for an individual to be aware of their needs, goals, and to accomplish daily challenges (Borson, 2010). Cognitive impairment contributes to the overall complexity of patient care and increases the patient's risk of poor functional outcomes during and after an acute episode of illness (Bowie, & Harvey, 2006; Davis et al., 2012). A mild cognitive impairment can impact an individual's ability to function, impede activities of daily living, and compromise the quality of a patient's life (Kim, 2020).

Mild cognitive dysfunction increases the risk for psychiatric inpatient hospital readmissions as it impacts a patient's functional outcomes (Bowie & Harvey, 2006; Davis et al., 2012; Marcantonio, et al., 2001). A matched case-control study looked at patients, 65 years or older, who were readmitted to the hospital within 30 days of discharge in a Medicare-managed care plan (Marcantonio, et al., 2001). Results indicated that these patients consumed additional health care resources, such as emergency visits to the medical hospital, and may be appropriate targets for interventions designed to reduce readmission (Marcantonio, et al., 2001). Little information exists to guide best practices in the treatment of older adults with cognitive impairment who are hospitalized for acute conditions (Davis et al., 2012). If obtained, level of cognitive functioning can potentially inform intervention, predict functional outcome and readmission rates (Davis et al., 2012). Improved recognition of cognitive impairment within an inpatient setting may decrease the number of inpatient readmissions. Cognitive impairment impacts a patient's self-care; impairment in self-care significantly predicted readmission within a 30-day period (Lyons, et al., 1997).

Cognitive functioning in Psychotic Disorders

Cognitive functioning in psychotic disorders, such as schizophrenia, schizoaffective disorder, and other related conditions, is often impaired and can have a significant impact on an individual's daily life. Cognitive dysfunction is a core feature of schizophrenia that is relevant to an increasing portion of the inpatient population (17.21%) (Bowie, & Harvey, 2006; Shah, Leontieva, & Megna, 2020). Cognitive impairments are reported in approximately 75% of individuals diagnosed with schizophrenia (Fisekovic, Memic, & Pasalic, 2012). Deficits have been observed to be moderate to severe across several domains, including attention, working memory, verbal learning and memory, and executive functions (Bowie, & Harvey, 2006). Cognitive deficits pre-date the onset of active psychosis and are stable throughout the course of the illness in most patients (Bowie, & Harvey, 2006). Over the past decade, the focus on these deficits has increased with the recognition that they are consistently the best predictor of functional outcomes across activities of daily living, treatment compliance, and medication adherence (Bowie, & Harvey, 2006). In addition to medication management, providers question the possibility for further intervention or compensatory strategies with cognitive re-training.

There is some debate as to whether cognitive impairments in schizophrenia are generalized or impact specific domains and can be recognized and profiled via neuropsychological assessment (Bowie, & Harvey, 2006). This argument is confounded by the fact that there is not a neuropsychological pattern of schizophrenia in testing as there sometimes is with other disorders, such as Alzheimer's Disease (Bilder, et al, 2002). While there may be domain-specific deficits in patients presenting with psychotic disorders, the degree and pattern of impairment can vary from person to person (Bilder, et al, 2002; Bowie, & Harvey, 2006). Schizophrenia is a heterogeneous disorder, meaning that it manifests differently in different

individuals. Some people with schizophrenia may have more pronounced cognitive deficits, while others may have relatively intact cognitive functioning. The heterogeneity suggests that cognitive profiles can vary widely among individuals with schizophrenia, which has implications for treatment planning and rehabilitation (Bilder, et al, 2002).

Some evidence has suggested that there are discrete domains of cognitive impairment within patients that have schizophrenia (Bilder, et. al, 2002). There are mild to moderate deficits in attention, verbal fluency, working memory, and processing speed, with superimposed severe deficits in declarative verbal memory and executive functioning (Bilder, et. al, 2002). Other work has suggested that discrete cognitive domains have differential correlates with symptom and functional domains (Bilder, et. al, 2002). In other words, patients with schizophrenia demonstrate at least some cognitive impairment, but, like other aspects of the illness, the severity and presentation of these impairments vary across patients (Bilder, et. al, 2002). A unique feature of cognitive deficits, as compared to other characteristics of schizophrenia, is that they remain relatively stable within the same patient over time (Bilder, et. al, 2002). The presentation of cognitive deficits of patients with schizophrenia are generally consistent in severity and topography across changes in a patient's clinical status (Bilder, et. al, 2002; Bowie, & Harvey, 2006; Harvey, et al. 1990).

Cognitive Deficits by Domain

Attention

Impaired attention is considered a primary cognitive deficit in schizophrenia (Bilder, et. al, 2002; Bowie, & Harvey, 2006; Harvey, et. al, 1990). Individuals who are genetically predisposed to schizophrenia have a poor ability to maintain their attention even prior to their

first psychotic episode (Bilder, et. al, 2002; Cornblatt, et. al, 1985; Harvey, et. al, 1990). Attentional impairments are typically present and are of moderate severity by the first onset of psychosis (Bowie, & Harvey, 2006; Caspi, 2003). They include deficits in sustained attention, selective attention, and divided attention,

Sustained attention, or the ability to maintain focus on a task or activity for an extended period, is often impaired in individuals with psychotic disorders. They may have difficulty concentrating on a single task, which can lead to problems with productivity, completing activities of daily living, or treatment adherence (Bowie, & Harvey, 2006; Caspi, 2003).

Selective attention refers to the ability to focus on specific stimuli while ignoring irrelevant information. People with psychotic disorders may have difficulty filtering out irrelevant sensory input, leading to sensory overload and increased distractibility (Bowie, & Harvey, 2006; Caspi, 2003).

Divided attention involves simultaneously processing multiple tasks or stimuli. Individuals with psychotic disorders may struggle with divided attention, finding it challenging to manage multiple demands or switch between tasks effectively (Bowie, & Harvey, 2006; Caspi, 2003).

Auditory hallucinations, a common symptom in schizophrenia, can interfere with sustained auditory attention. Individuals may be preoccupied with hearing voices, making it difficult to concentrate on other auditory stimuli or tasks (Bowie, & Harvey, 2006; Caspi, 2003).

Overall, attentional deficits can contribute to the severity of positive symptoms in psychotic disorders, such as hallucinations and delusions. For example, individuals may be more prone to misinterpret sensory information or be less able to discern between reality and

hallucinatory experiences. Negative symptoms, which involve diminished emotional expression, social withdrawal, and reduced motivation, can also be influenced by attentional deficits. Impaired attention may limit an individual's ability to engage in social interactions and perform daily activities (Bowie, & Harvey, 2006; Caspi, 2003).

Working Memory

There is increasing evidence that working memory dysfunction, particularly verbal working memory, is a core cognitive deficit in schizophrenia (Bowie, & Harvey, 2006). Working memory can be conceptualized as the ability to maintain and manipulate informative stimuli (Bowie, & Harvey, 2006). In other words, it enables an individual to hold information momentarily without losing focus on their current task. When compared to attention span, working memory carries more of a “cognitive load,” due to the additional demands of manipulating the information (Bilder, et. al, 2002; Bowie, & Harvey, 2006). An example of this would be a task that has the patient remember a string of non-consecutive numbers and not only recall them immediately, but mentally manipulate the numbers so that they are verbally repeated back to the examiner in numerical order. The information must be held onto for processing and mental manipulation, but does not necessarily transfer to long-term storage, as demonstrated by tasks such as Digit Span on the WAIS. Verbal Working Memory impairments in tasks that require temporary maintenance of verbal information, such as a word list, are quite common and often moderate to severe in magnitude in patients with schizophrenia (Bowie, & Harvey, 2006; Gold et al., 1997; McGurk et al., 2004). Working memory is closely related to other cognitive functions, such as attention, executive function, and verbal memory. Impairments in working memory can contribute to broader cognitive impairments in individuals with psychotic disorders.

Working memory deficits can affect various aspects of daily life, including the ability to manage finances, complete complex tasks, and adhere to medication regimens. Individuals may struggle with tasks that require multitasking, organization, and mental flexibility (Bowie, & Harvey, 2006; Caspi, 2003).

Studies have shown a link between working memory deficits and positive symptoms of psychosis, such as hallucinations and delusions. Impaired working memory may contribute to the persistence and severity of these symptoms (Bowie, & Harvey, 2006; Caspi, 2003). The exact causes of working memory deficits in psychotic disorders are not fully understood but may involve complex neurobiological factors. Structural and functional abnormalities in brain regions associated with working memory, such as the prefrontal cortex, may play a role (Bowie, & Harvey, 2006; Caspi, 2003).

Verbal Fluency

Patients with schizophrenia have difficulties producing speech on demand (Bowie, & Harvey, 2006). Verbal fluency tests assess their ability to produce words from a specific phonological or semantic category, such as the Controlled Oral Work Association Test (Bowie, & Harvey, 2006). These tests reveal both poor encoding and storage of verbal information (Kerns et al., 1999) in addition to inefficient retrieval of information from semantic networks in patients with schizophrenia (Aloia et al., 1996; Bowie & Harvey, 2006; Goldberg et al., 1998). Individuals with psychotic disorders often produce fewer words than healthy controls on verbal fluency tasks. They may struggle to generate enough words within the time constraints. Verbal fluency deficits may be related to difficulties in accessing and retrieving words from their mental lexicon. This can lead to pauses, hesitations, and difficulty finding appropriate words. In

category-based tasks, individuals may have difficulty shifting between different categories (e.g., switching from animals to fruits). In letter-based tasks, they may struggle to switch to words that begin with a new letter (Kerns et al., 1999). Successful performance on verbal fluency tasks often involves clustering words by related concepts (e.g., naming several types of fruits in succession) and efficient switching between categories or letters. Individuals with psychotic disorders may exhibit deficits in these strategies (Kerns et al., 1999). Deficits in verbal fluency are also associated with poor interpersonal functioning (Addington & Addington, 2000).

Verbal Leaning and Memory

Poor learning and retention of verbal information is a hallmark of cognitive impairment in schizophrenia (Bowie, & Harvey, 2006). Along with executive functioning deficits, an impaired ability to encode and retain verbally presented information is one of the most consistent findings across research studies in patients with schizophrenia (Bowie, & Harvey, 2006). These observed deficits tend to be more severe than other cognitive ability domains (Bowie, & Harvey, 2006; Saykin et al., 1991; Saykin et al., 1994). The pattern of deficits in schizophrenia tends to present as reduced rates of learning and retention over multiple exposure trials, poor recall of learned information, and rapid forgetting (Bowie, & Harvey, 2006). Even if individuals can initially recall information, their ability to retain it over longer periods is impaired. Research suggests that individuals with psychotic disorders may have a flatter learning curve, meaning that their rate of learning and memory consolidation is slower compared to healthy controls (Bowie et al., 2004; Bowie, & Harvey, 2006; Harvey et al., 2002).

However, some studies have demonstrated that encoding of information appears to be preserved as evidenced by intact recognition of the target stimuli from distractors (Bowie et al.,

2004; Bowie, & Harvey, 2006; Harvey et al., 2002). Some patients with a chronic course of illness and substantial functional impairments do show deficits in recognition memory along with a global pattern of profound cognitive impairments and deteriorating functional skills (Bowie et al., 2004; Bowie, & Harvey, 2006). Verbal memory performance predicts success in various forms of verbal therapy and is the best indicator of premorbid functioning (Smith et al., 1999), It is associated with social, adaptive, and occupational success (Bowie, & Harvey, 2006; Green et al., 2000). Verbal learning deficits can impact various aspects of daily life, including communication, educational and occupational performance, and the ability to follow instructions and retain important information. The underlying cognitive mechanisms contributing to verbal learning deficits in psychotic disorders are complex. Factors such as impaired attention, working memory, and executive function can all play a role in these deficits (Bowie et al., 2004; Bowie, & Harvey, 2006; Harvey et al., 2002).

Executive Functioning

Executive functioning encompasses a wide range of cognitive processes that ultimately result in purposeful, goal-directed behavior (Bowie, & Harvey, 2006). Executive functions enable a patient to plan, follow multiple-step directions, in addition to displaying self-control. Executive functioning deficits can impact various aspects of daily life, including the ability to plan and carry out tasks, make sound decisions, and adapt to changing circumstances.

Studies using formal neuropsychological assessments have found that many patients with schizophrenia have difficulties with most or all these component processes (Bowie, & Harvey, 2006). For example, patients have a difficult time forming a conceptual framework to understand ambiguous stimuli due to inflexible, rigid thinking (Bowie, & Harvey, 2006; Haut et

al., 1996). If a concept is comprehended, patients with schizophrenia have trouble adapting to changes in the environment that require different behavioral responses (Bowie, & Harvey, 2006; Koren et al., 1998; Pantelis et al., 1999). Rigid thinking is highly correlated with occupational difficulties (Bowie, & Harvey, 2006; Lysaker et al., 1995). Planning is an additional component of executive functioning that is often found to be impaired in patients with schizophrenia (Bowie, & Harvey, 2006; Bustini et al., 1995; Goldberg et al., 1990; Pantelis et al., 1997). Self-care, social, interpersonal, community, and occupational functions are all associated with executive functioning in schizophrenia (Bowie, & Harvey, 2006; Evans et al., 2004; Lysajer et al., 1995; McGurk et al., 2003; Valligan et al., 1995). Importantly, executive functions are also associated with treatment success (Bowie, & Harvey, 2006). Impairments in this domain are associated with less engagement in therapy (McKee et al., 1997), medication compliance (Jeste et al., 2003; Robinson et al., 2002), and longer hospital stays (Jackson et al., 2001).

Recognizing specific cognitive deficits is important because it can inform targeted cognitive remediation interventions. Cognitive remediation programs aim to improve cognitive functioning in specific domains, helping individuals with schizophrenia develop strategies to compensate for their deficits. These programs often involve cognitive training exercises and psychoeducation for both the patient and their caretakers to enhance cognitive skills.

Executive functions encompass a range of cognitive processes, including planning, organizing, initiating, and inhibiting actions, shifting between tasks, problem-solving, working memory, and cognitive flexibility. In individuals with psychotic disorders, deficits in executive functioning are often characterized by difficulties in one or more of these areas.

These deficits can hinder independent living, educational attainment, and occupational functioning. Executive functioning deficits have been linked to both positive symptoms (e.g., hallucinations and delusions) and negative symptoms (e.g., diminished emotional expression and social withdrawal) in psychotic disorders. Impairments in executive functions may contribute to difficulties in interpreting and responding to reality, as well as limitations in social interactions and goal-directed activities.

Patient Readmission to Inpatient Psychiatric Hospitals

Readmission Rates

It is estimated that about one-third of patients admitted to inpatient psychiatric services will probably be readmitted within a year (Rosca, et al., 2006). The readmission rate may be used to measure the extent of the quality of care rendered to patients which is also the focus of interest for all health sector policymakers (Durbin et al., 2007; Owusu et al., 2022). The readmission rate is also used as the determinant of quality of care for measuring outcomes such as continuity of care and follow-up services (Owusu et al., 2022).

The concept and definition of the readmission period varies between studies. For example, across studies it has been defined as readmission within 90 days, readmission within 3 years, admission three or more times within 30 months, readmission within 6 months, and admittance of 3 or more times within 2.5 years (Owusu et al., 2022). This has resulted in a variance in the reported rates of readmission in different studies as 14%, 16%, 20–30%, and 45–53%, respectively (Owusu et al., 2022).

Factors in Readmission Rates

Poor treatment adherence, involuntary first admission, substance, alcohol, and drug abuse all have been identified as related factors to the readmission of patients to inpatient psychiatric facilities (Owusu et al., 2022). Other demographic characteristics such as marital status, unemployment, retirement, and gender, are also considered relevant factors that can influence readmission (Owusu et al., 2022). Specific diagnoses may be correlated with a higher readmission rate. For example, the diagnosis of schizophrenia has been reported as a significant factor in readmission (Owusu et al., 2022). The diagnoses of bipolar disorder, psychotic disorders, and mood disorders also have been indirectly connected with readmission (Owusu et al., 2022). Diagnosis does mean that readmission is inevitable. However, as discussed previously, some diagnoses are correlated to deficits across cognitive domains creating an obstacle for treatment adherence. The severity of symptom presentation may make it more likely that a patient is readmitted to an inpatient facility (Bowie, & Harvey, 2006; Evans et al., 2004; Lysajer et al., 1995; McGurk et al., 2003; Valligan et al., 1995). In some studies, diagnoses with more psychiatric comorbidities were also a factor associated with readmission (Owusu et al., 2022). Suicidal ideation or thoughts of self-harm, history of psychological problems in childhood, and the first episode of the psychiatric disorder under 18 years have all been revealed as related factors for readmission (Owusu et al., 2022). The length of stay in the inpatient hospital has also been observed to impact readmission (Owusu et al., 2022). The briefer the psychiatric inpatient admission, the more that it is associated with a higher likelihood of readmission (Owusu et al., 2022). This can affect the quality of care and increase the costs of service to the provider (Owusu et al., 2022). Identifying and understanding the influential factors related to psychiatric readmission rates may help to implement and manage preventative

interventions (Owusu et al., 2022). Identifying predictors of readmission at the inpatient level of care can inform health policies and quality improvement interventions to mitigate cost and the burden to systems and families (Owusu et al., 2022).

Assessment of Cognitive Impairment

Best practice for thoroughly evaluating cognitive impairment includes the administration of a tailored neuropsychological battery (Helldin, et al., 2006). Neuropsychological test batteries typically focus on the assessment of multiple cognitive domains which may include learning, memory, language, processing speed, executive functioning, attention, and visuospatial ability. The main advantage of a full neuropsychological battery is that they may identify patterns of strengths and weaknesses across multiple functional domains which aids diagnosis and better predicts prognosis (Helldin, et al., 2006). They may also be able to demonstrate a patient's ability to care for themselves. However, full neuropsychological batteries are rarely assessed formally in acute care, or psychiatric inpatient settings. This is primarily because they can be extensive, time consuming, difficult to administer with a patient in an acute state, may require specialized training for interpretation, and are unavailable in some facilities. Stabilization is understandably the focus for patients in these settings. Therefore, it is difficult to track the cognitive change during and between admissions within patients in these settings (Davis et al., 2012). The negative symptoms of a psychotic disorder can be difficult to discern from the deficits of cognitive decline, however, can drastically impact treatment planning and success. A cognitive impairment may impact patient prognosis and ability to function outside of a setting focused on stabilization. Therefore, neuropsychological testing is required to thoroughly answer this question. However, creating a battery of tests that must be short enough to fit the needs of

the patient and allow them to demonstrate their ability, while still providing enough information for accurate diagnosis and prognosis is a challenge.

Assessments Utilized in Psychiatric Settings

The global cognitive deficit, or deficits across cognitive domains, of patients with schizophrenia is an average of 1 to 2 standard deviations (SD) below the healthy control mean (Hurford, et al., 2011). As previously reviewed, patients with schizophrenia are more likely to be impaired in areas of verbal skills (Bozikas, Kosmidis, & Karavatos, 2005), memory (Collins, et al., 2014), attention (Orellana., Slachevsky, & Peña, 2012), processing speed (Helldin, et al., 2006), and executive functions, with deficits up to 2.5 SD below control subjects (Hurford, et al., 2011). These neurocognitive deficits could affect an individual's potential across different functional domains, such as occupational and interpersonal functioning, the completion of activities of daily living, and independent living (Lepage, Bodnar, & Bowie, 2014). Classic features of psychotic disorders that may be present are delusions, hallucinations, disturbed thinking processes, flattening of affect, and abnormal behaviors, Symptoms can be either persistent or episodic (American Psychological Association, 2013).

Brief Cognitive Batteries

Brief cognitive batteries, such as the Brief Assessment of Cognition in Schizophrenia (BACS), the Brief Cognitive Assessment (BCA), and the Brief Cognitive Assessment Tool for Schizophrenia (B-CATS) have been developed to assess cognitive functioning in individuals with schizophrenia (Hurford, et al., 2011). Unfortunately, their psychometric properties are not well established, and they are not typically used in clinical practice (Hurford, et al., 2011). The disadvantage to using the BACS is that it requires approximately 35 minutes of administration

time with the patient and additional scoring time for the clinician (Hurford, et al., 2011). The attention span of patients in an inpatient psychiatric setting can be variable, and therefore, a short battery is advantageous to assessment (Wu, Dagg, & Molgat, 2014). Although they only require a 12-to-15-minute administration time, the BCA and B-CAT present some scoring limitations for the clinician (Wu, Dagg, & Molgat, 2014). Raw scores are based on cognitive domains and need to be converted into z-scores. There is no direct total score or cut-off score that is available for an easy assessment of the cognitive functioning, limiting the test interpretation (Wu, Dagg, & Molgat, 2014).

The Mini-Mental State Examination (MMSE)

The Mini-Mental State Examination (MMSE), a widely utilized, first-choice screening tool across professions, has been used in clinical practice to detect cognitive impairment in relation to neurological disorders (Rajji, Ismail, & Mulsant, 2009). While previous studies support the association of MMSE with age and education, few studies have examined aspects like the association of cognitive impairment with clinical factors such as age of illness onset (Rajji, Ismail, & Mulsant, 2009), types of antipsychotic medications (Désaméricq, et al., 2014), and duration of illness (Talreja, Shah, & Kataria, 2013). Several studies have also shown that the MMSE is largely insensitive to identifying mild cognitive impairment (Ravaglia, et al., 2005) and that it may not be a useful tool in the presence of mood disorders (Anderson et al., 2007). In addition, the MMSE was found to have a poor sensitivity for detecting cognitive disturbances in community mental health centers (Mackin, et al., 2010).

The Texas Functional Living Assessment (TFLS)

The Texas Functional Living Scale (TFLS) is a performance-based measure of functional abilities with an emphasis on instrumental activities of daily living skills that is brief and weighted toward cognitive tasks (Cullum, 2001). There are 24 ordinary activities to complete, such as using a telephone, reading a calendar, telling time, calculating money, and memory tasks. The TFLS demonstrated the highest predictive ability for examining activities of daily living, however it may be too long to administer within an inpatient psychiatric facility (Cullum, 2001).

The Montreal Cognitive Assessment (MoCA)

The Montreal Cognitive Assessment (MoCA) has been utilized with individuals in acute inpatient psychiatric settings as a screening instrument with variable results (Rosca, Cornea, & Simu, 2020). It was developed in 2005 for the purpose of detecting mild cognitive impairment (MCI) and its' results have been shown to be highly sensitive and specific in the older adult population (Nasreddine, et al., 2005). The MoCA is a brief neuropsychological screener that is simple enough to be administered at a patient's bedside. Total administration time typically runs about 10 to 15 minutes. The MoCA assesses short-term memory, attention, working memory, and executive functions, which are commonly affected in patients admitted to a crisis stabilization unit, or inpatient psychiatric hospitals. Scores on the MoCA range from zero to 30 points, with a score of 25 or lower indicating a cognitive impairment (Rosca, Cornea, & Simu, 2020). This cut-off score of 25 or lower is widely recognized as a threshold for detecting cognitive impairment and potential dementia. Practice effects have been minimized as there are three versions of the MoCA, which test the same domains but differ in content (Rosca, Cornea, & Simu, 2020). The alternative versions of the MoCA present comparable reliability to the

original test (Costa, et al., 2012). The MoCA has also been translated into more than 60 languages (Rosca, Cornea, & Simu, 2020). In addition, training is available on the MoCA website. Certification for the MoCA was made a mandatory requirement as of September 2019 (Rosca, Cornea, & Simu, 2020). The process of training is standardized so that testing is consistent among multiple raters, minimizing errors, and thus minimizing liability and misdiagnosis (Rosca, Cornea, & Simu, 2020).

Psychometric Properties of The Montreal Cognitive Assessment

Several studies have consistently reported that the MoCA has good overall psychometric properties and a good sensitivity in identifying milder forms of cognitive impairment across clinical conditions (Rosca, Cornea, & Simu, 2020). The MoCA has widespread international use (Ismail, Rajji, & Shulman 2010). For example, in regard to identifying Mild Cognitive Impairment (MCI), the internal consistency of MoCA was reported to be excellent, with a Cronbach's alpha of 0.83 on the standardized items (Nasreddine, et al., 2005). The test-retest reliability was also good, with a mean change in MoCA scores from the first to second evaluation of 0.9 points (Nasreddine, et al., 2005). Furthermore, Koski, Xie and Finch (2019), found in a sample at an inpatient psychiatric facility, utilizing Rasch analysis techniques, that scores on the MoCA can be used to quantify the amount of cognitive ability a person has and can be used to track changes in cognitive ability over time (Koski, Xie, & Finch, 2019). Rasch analysis is a psychometric technique that was developed to improve the precision with which researchers construct instruments, monitor instrument quality, and compute respondents' performances (Boone, 2016). Validation studies of the MoCA have been conducted concerning different types of neurological disorders, such as MCI (Freitas, et al., 2013), Alzheimer's disease

(Freitas, et al., 2013), Parkinson's disease (Hoops, et al., 2009), and Huntington's disease (Hoops, et al., 2009).

Early diagnosis and specific treatment of cognitive impairment in individuals with serious mental illness is essential, as cognitive impairment is a factor related to functional disability (Bell, & Bryson 2001). For example, ratings of work behavior and performance are related to baseline scores on cognitive tests (Bell, & Bryson 2001). Improvement in patient work performance in a 6-month work rehabilitation program was predicted by baseline performance on cognitive tests (Bell, & Bryson 2001). In addition, cognitive impairments are associated with deficits in the ability to perform everyday tasks, or functional capacity, and can be predicted with considerable accuracy by performance-based measures (Mausbach et al., 2008). Furthermore, quality of life is affected by the presence of cognitive impairment (Mohamed et al., 2008). Cognitive functioning have been shown to be associated with medication adherence, being strong predictors of patients' ability to manage medications, and ability to prevent relapses (Jeste et al., 2003). The presence of cognitive impairment is also a major factor in the direct and indirect costs associated with schizophrenia (Sevy & Davidson, 2003). Factors leading to the increased cost include loss of ability for self-care, emergency room visits, level of inpatient and outpatient care needed, and loss of productivity for patients as well as caregivers (Keefe & Harvey, 2012; Marcantonio, et al., 2001).

The MoCA in an Inpatient Setting

The MoCA fulfills the very important feasibility criteria for use in clinical practice, especially within the inpatient setting. It has a short administration time, with multiple translations (Rosca, & Simu, 2020). Furthermore, online training and certification is available on the MoCA website to ensure standardized administration across clinicians. It has proven to have

good psychometric properties in other populations and assesses a broad range of cognitive domains. The MoCA may help identify individuals with schizophrenia that require further assessments and specific care, facilitating access to appropriate services (Rosca, & Simu, 2020). Nonetheless, being wrongly tested as positive for cognitive impairment implies significant costs due to further unnecessary neuropsychological evaluation (Rosca, & Simu, 2020). Therefore, there is considerable value in determining the strength of the empirical evidence that supports the use of MoCA as a screening test for cognitive impairment in psychiatric inpatients (Rosca, & Simu, 2020).

A Review of MoCA Literature

The literature on the MoCA as a diagnostic screener for inpatient psychiatric settings is mixed. The MoCA was utilized in diagnosing cognitive impairment in psychiatric inpatients (Gierus et al., 2015). A threshold score of 23, which is not the typical cut score, represented good sensitivity and specificity (0.82 and 0.70) in diagnosing neurocognitive disorders within the inpatient population (Gierus et al., 2015). The data has suggested that the total score on the MoCA is the most accurate in distinguishing neurocognitive disorders, such as dementia, from anxiety (Gierus et al., 2015). A MoCA threshold score of 23 was the least accurate in terms of differentiating neurocognitive disorders from psychotic disorders (Gierus et al., 2015). 77 patients diagnosed with schizophrenia were given the MoCA (Gierus et al., 2015), 25.9% scores on MoCA between 0 and 19, 46.7% presented a score between 20 and 26, and 27.2% presented a score of 27 or more representing large range of scores (Gierus et al., 2015).

The MoCA was utilized to detect cognitive impairment in 140 patients with long-term psychotic disorders (Gil-Berrozpe et al., 2019). Cognitive abilities were assessed with the MoCA

test and the Matrices Consensus Cognitive Battery (MCCB; Gil-Berrozpe et al., 2019). The Cronbach's alpha of MoCA was 0.76, suggesting only moderate reliability (Gil-Berrozpe et al., 2019). Regarding the cognitive domains assessed, the MoCA's executive/visuospatial subtest showed significant associations with all the domains except social cognition and attention/vigilance (Gil-Berrozpe et al., 2019). There have been more cases of Mild Cognitive Impairment that were detected when using the MoCA than when using the MMSE (Ramirez et al., 2014). As a cognitive assessment screening instrument, the MoCA showed adequate concurrent validity when compared with the scores obtained with the MMSE and with the global severity observed in the Positive and Negative Syndrome Scale (PANSS) assessment (Ramirez et al., 2014).

The correlation between the MoCA total score and the length of stay in an inpatient psychiatric facility was negative (Wu et al., 2014). A higher MoCA score was associated with a shorter length of stay (Wu et al., 2014). The average MoCA total score was 20.26 (SD = 5.63), ranging from 3 to 29 (Wu et al., 2014). About 85% of the scores fell below the suggested 26 cut-off score, indicating most of the patients had some degree of cognitive impairment (Wu et al., 2014). On average, patients with schizophrenia performed worse on every single item as well as the total score compared to existing MoCA normative data of normal controls (Nasreddine, et al., 2005). The patients performed the worst on the delayed recall task with most patients (92%) unable to score full points (Wu et al., 2014). Other items that presented difficulty included abstraction, orientation, sentence repetition, serial 7 subtractions, verbal fluency, and trail making (Wu et al., 2014). Most of the patients (84%) correctly performed the naming task (Wu et al., 2014).

When validating MoCA against the MCCB, five out of seven MoCA subtests (visuospatial-executive, attention, language, abstraction, and delayed recall) were significantly associated with the MCCB subtests (Gil-Berrozpe et al., 2020). The naming and orientation MoCA subtests were not correlated with the MCCB subtests (Gil-Berrozpe et al., 2020). In addition, the social cognition and vigilance domains assessed by MCCB were the less corelated with MoCA because it does not assess social cognition or the ability of the patient to maintain sustained attention (Gil-Berrozpe et al., 2020). Moreover, the MoCA does not specifically assess processing speed, which is one of the core cognitive impairments in patients with schizophrenia (Gil-Berrozpe et al., 2020).

When compared to other short batteries such as MMSE, investigations of the MoCA in psychotic spectrum disorders have proved its superiority. The MoCA contains specific subtests addressing executive functions and attention (Pendelbury et al., 2010).

A possible explanation for the different results obtained across studies in patients with schizophrenia could be that MoCA does not evaluate some specific cognitive deficits of schizophrenia (Gil-Berrozpe et al., 2020). Despite this, the items of MoCA could be useful in older patients, which can present multiple comorbidities such as increased vulnerability to Alzheimer's disease, cardiovascular risk factors, and cerebrovascular disease (Gil-Berrozpe et al., 2019). Cognitive impairment is associated with illness severity and negative symptoms (Wu et al., 2014). There was no significant decline or improvement in cognitive impairment during hospital stay in patients with severe schizophrenia, even though their illness severity and clinical symptoms improved significantly at discharge (Wu et al., 2014). Cognitive impairment is relatively stable over different test-retest intervals and across psychotic state changes (Wu et al.,

2014). However, it is worth noting that orientation scores improved from admission to discharge (Wu et al., 2014).

Although the MoCA has the potential to be a promising screening test for patients with schizophrenia, when used at the recommended cutoff score of 26, it may not be the best discriminating tool for this specific population (Gil-Berrozpe et al., 2020; Wu et al., 2014). While clinicians may prefer a test with high sensitivity, this could increase the number of patients referred for a full neuropsychological battery (Gil-Berrozpe et al., 2020). On the contrary, a higher specificity may reduce the number of referrals, but many true cases could be overlooked (Gil-Berrozpe et al., 2020). A lower cutoff score has the potential to provide a better balance between true positives and false positive results (Gil-Berrozpe et al., 2020). It could also be used to identify individuals that should be assessed with a comprehensive neuropsychological battery (Gil-Berrozpe et al., 2020).

The MoCA is accurate in detecting the presence of cognitive impairment, but it is less sensitive for determining whether it is mild or severe according to the MCCB criteria, which is the standard for assessing schizophrenia patients (Gil-Berrozpe et al., 2020). A baseline evaluation upon admission would enable the clinician to track cognitive changes over time, within and between admission, and identify patients that may be more vulnerable to these cognitive impairments (Gil-Berrozpe et al., 2020).

The MoCA presents many benefits with its' use. It significantly decreases the cognitive assessment time and costs for both the patient and the provider. However, a diagnosis should not be made on MoCA results alone. A possible solution to enhance the sensitivity and specificity of the MoCA could consist of an additional short battery of tests. The MoCA can be performed in settings with limited resources, or even bedside. Minor adjustments could be made to the current

administration and scoring, that could answer additional questions. For instance, the executive functioning tasks could potentially be timed to examine processing speed (Gil-Berrozpe et al., 2020). With further research, there may be available norms related to processing speed in different populations. The MoCA appears to have the potential to be a promising screening tool for individuals with schizophrenia, especially when a lower than the recommended threshold of 26 is used, but further research is needed in this domain (Gil-Berrozpe et al., 2020).

The Impact of Medication on the MoCA

Antidepressants, antipsychotics, sleeping pills, and mood stabilizers are commonly utilized within the inpatient setting. The current literature most closely examines the relationship between MoCA score and medication in patients treated for Attention-deficit/hyperactivity disorder (ADHD), substance use disorders, or dementia. The literature is currently in need of studies that examine the impact of antipsychotics or mood stabilizers on MoCA scores.

ADHD frequently co-occurs with substance use disorders and has some overlapping symptoms with mild cognitive impairment, particularly impacting executive functioning (Bergly & Somhovd, 2018). A study examined the cognitive functioning of 129 inpatients with a diagnosis of ADHD across seven treatment clinics in Norway (Bergly & Somhovd, 2018). A relative risk estimate (RR) for scoring in the mild cognitive impairment range (< 26) on the MoCA was calculated for patients with a diagnosis of ADHD that were and were not taking medications (Bergly & Somhovd, 2018). There was no excess risk of mild cognitive impairment-like symptoms for the ADHD group (Bergly & Somhovd, 2018). Overall, within the ADHD group, there was a possible lower risk of mild cognitive impairment-like symptoms for patients taking medication (Bergly & Somhovd, 2018). These results suggested that there may be a confounding overlap of symptoms between ADHD and cognitive functioning screens that

necessitates adequate assessment and treatment of ADHD before screening or measuring cognitive functioning (Bergly & Somhovd, 2018).

Cognitive functioning is a challenge for many patients with substance use disorders (SUD), which often co-occur with psychiatric disorders within the inpatient setting (Sømhovd, et al., 2019). Residential SUD treatment can be cognitively demanding (Sømhovd, et al., 2019). Treatment retention is a predictor for success in SUD treatment, and the current literature links low cognitive functioning to increased dropout rates. A study investigated cognitive functioning as measured by the MoCA and dropout rate risk from a residential SUD treatment setting, while considering psychological distress (Sømhovd, et al., 2019). Dropout risk was higher for those patients that scored below the MoCA cut-off. Dropout risk also had an inverse relationship with age (Sømhovd, et al., 2019). The younger the patient was, the more likely they were to drop out of their residential SUD treatment program (Sømhovd, et al., 2019). The results of this study demonstrate that SUD patients should routinely be screened for cognitive impairment, as it predicts dropout. The MoCA is a useful screening tool for this and may have the potential to inform intervention, aftercare, and decrease residential dropout rates.

Second generation acetylcholinesterase inhibitor medications, such as donepezil, can stimulate the prefrontal cortex so that cognitive functioning can potentially be improved (Tamingga, 2019; Akbar et al., 2019). Donepezil is often referred to as a “memory medication,” and is used in the treatment of mild cognitive impairment, Alzheimer’s Disease, and Parkinson’s Disease. A recent study which took place in Indonesia assessed the MoCA-Ina scores, which is the MoCA version translated for use in Indonesia, of 42 public hospital patients in an inpatient setting that were diagnosed with schizophrenia (Akbar et al., 2019). Overall, this cohort of patients had been prescribed a fixed dose of risperidone (Akbar et al., 2019). The patients in the

intervention group were prescribed an additional 5 milligrams of donepezil per day throughout the first six weeks of the study (Akbar et al., 2019). The intervention group's donepezil dosages were increased to 10 milligrams from the sixth to twelfth weeks of the study. The average score of MoCA-Ina for patients in the intervention group was 21.00 (Mild Cognitive Impairment) with a SD of 2.0 (Akbar et al., 2019). The risperidone-only group of patients had an average MoCA score that was 20.45 (Mild Cognitive Impairment) with a SD of 1.9 after the sixth week of the study (Akbar et al., 2019).

In patients diagnosed with Alzheimer's disease, drug therapy combined with donepezil has a certain degree of influence on memory screeners, increasing MMSE and MoCA scores (Ma, et al., 2019). Donepezil can decrease the Aβ level in peripheral blood and improve the cognitive functioning of patients, thus having the potential for important clinical significance (Ma, et al., 2019).

Some medications, especially those with anticholinergic properties, can lead to cognitive impairments, particularly in areas such as attention and memory. These medications block the action of the neurotransmitter acetylcholine, which is involved in cognitive processes. Common examples of anticholinergic drugs include certain antihistamines, diphenhydramine, sleep aids such as Nyquil, antipsychotics, and medications for overactive bladder. Medications with anticholinergic effects may lead to lower MoCA scores, especially in the attention and memory domains. Individuals taking such medications may exhibit deficits in these areas during the assessment.

Sedative medications, such as benzodiazepines and some sleep aids, can induce drowsiness and impair alertness and concentration. These effects can impact a person's performance on cognitive tests like the MoCA. Sedative medications may lead to reduced scores

on MoCA subtests that assess attention, concentration, and alertness. Individuals taking these medications may have difficulty staying attentive during the assessment.

Medications like stimulants (e.g., amphetamines) may have the opposite effect, temporarily enhancing alertness, attention, and some aspects of cognitive performance. In some cases, this could result in better MoCA scores during the period of medication action. Stimulant medications may lead to improved performance on MoCA subtests that assess attention and concentration. However, it's essential to consider the potential for these medications to mask underlying cognitive deficits.

Various other medications can have cognitive effects, either positive or negative, depending on the individual's response and the specific medication. For example, certain antipsychotic medications may influence cognitive functioning in individuals with schizophrenia. The influence of these medications on MoCA performance can vary widely. It's essential to consider the medication's specific effects and the individual's response during the assessment.

It's important to note that medication effects on cognitive testing can be complex and vary from person to person. Additionally, medication-related cognitive changes are typically temporary and reversible once the medication is discontinued or adjusted. When using the MoCA or any cognitive assessment tool, healthcare professionals should consider a person's medication history, current medications, and potential medication side effects as part of the assessment process. Monitoring cognitive functioning over time and taking into account the individual's clinical history is essential for a comprehensive evaluation of cognitive impairment and its potential relationship to medication use. Adjustments to medication regimens may be necessary when cognitive deficits are suspected to be medication related.

In sum, the current literature is currently in need of studies that examine the impact of medication on MoCA score. It may be helpful for future research to establish MoCA norms for different populations being screened, such as inpatient, those diagnosed with schizophrenia, or patients with substance use disorders. The unknown impact of individual medication regimen on MoCA score is a limitation of this study.

The Impact of Illicit Drug Use on MoCA Score

Patients in an acute state of crisis are sometimes admitted to an inpatient facility with illicit drugs in their system. A drug screen via urine analysis is performed upon admission at our facility of interest. For the purposes of this study, it is important to be cautious and consider the impact that illicit drugs may have on cognitive performance, even if the patient has been hospitalized for a few days prior to testing.

Cognitive impairment in methamphetamine (MA) users with psychosis may be more severe than that in MA users without psychosis (Srisurapanont, et al., 2020). A recent study compared the overall cognitive functioning and specific cognitive domains between MA users with and without formally assessed psychosis. Participants included 113 MA users with psychosis and 120 MA users without psychosis. The recent use of MA, within one month prior to admission, was confirmed using quantitative analysis of hair. The MoCA total and individual domain scores were used to compare participants with and without psychosis (Srisurapanont, et al., 2020). The association between MA psychosis and the MoCA total scores was still statistically significant after the adjustment for years in education in an ordinal logistic regression analysis (Srisurapanont, et al., 2020). Patients who use MA with psychosis had poorer overall cognitive functioning than MA users without psychosis (Srisurapanont, et al., 2020).

Cognitive impairment was prominent in the domains of visuospatial/executive function and abstraction (Srisurapanont, et al., 2020).

Cannabis is the most widely used illicit substance globally (Goud et al., 2022). A study assessed 50 young male patients who were admitted to a rehabilitation facility for cannabis use (Goud et al., 2022). The MoCA was used to assess the baseline cognitive functioning of these patients initially and after 1 week of abstinence from cannabis use (Goud et al., 2022). The patient scores were then compared with 50 graduate students that had no history of cannabis use (Goud et al., 2022). The MoCA was re-administered to the patient subjects after 3 months of strict abstinence from cannabis use (Goud et al., 2022). There was a statistically significant difference between the baseline MoCA score of cannabis users and the controls (Goud et al., 2022). Both the duration and the quantity of cannabis use in the patient group had a negative correlation with the MoCA score (Goud et al., 2022). When the MoCA test was re-administered after 3 months of abstinence, there was a statistically significant improvement in cognitive functioning in patients who used cannabis. However, the patient mean score was still less than the mean score of the student group showing only partial improvement (Goud et al., 2022). This study demonstrated the cognitive deficits that can be seen in cannabis users as compared to nonusers (Goud et al., 2022). It also showed that abstinence from cannabis in the patient sample had partially reversed the impairment, but still some deficits remained (Goud et al., 2022).

In sum, despite the information that a urine analysis upon admission can provide, the potential impact of illicit drug use on MoCA score is a limitation of this study.

The Impact of Psychosis on MoCA Score

As previously discussed, cognitive impairment is a key feature in patients with psychotic disorders. 140 stabilized patients were re-evaluated more than 15 years after a First Episode of Psychosis (FEP;Gil-Berrozpe et al., 2020). Patients were assessed for symptoms of psychopathology, and both the MoCA and MATRICS Consensus Cognitive Battery (MCCB) were administered (Gil-Berrozpe et al., 2020). Concurrent validation was found between the total scores of the MoCA and MCCB (Gil-Berrozpe et al., 2020). Significant associations between 5 out of 7 MoCA subtests (visuospatial-executive, attention, language, abstraction and delayed recall) and MCCB subtests but not for the naming and orientation MoCA subtests were found (Gil-Berrozpe et al., 2020). These results suggested that the MoCA is a useful screening instrument for assessing cognitive impairment in psychotic patients and has some advantages over other available instruments, such as its ease-of-use and short administration time (Gil-Berrozpe et al., 2020; Gierus et al, 2015).

Individuals experiencing psychosis may have difficulty distinguishing between reality and hallucinations or delusions. This altered perception of reality can affect their ability to respond accurately to questions and tasks on the MoCA. Hallucinations or delusions may lead to incorrect responses on cognitive tasks that require an accurate understanding of reality. For example, a person experiencing auditory hallucinations may misinterpret spoken instructions.

Psychosis can make individuals highly distractible, as they may be preoccupied with internal experiences such as hallucinations or intense beliefs related to their delusions. Distractibility can lead to difficulty in maintaining focus during the MoCA assessment, affecting performance on tasks that require sustained attention.

Individuals with psychosis may find it challenging to concentrate due to the intrusive nature of their symptoms, which can interfere with their ability to process information and complete tasks. Impaired concentration can result in reduced scores on tasks that require sustained attention and working memory, such as serial subtraction or digit span tasks.

Psychosis can disrupt logical thinking and cognitive organization. Delusional beliefs may lead to irrational thought patterns that can impact problem-solving and cognitive flexibility. Disrupted thinking can affect performance on tasks that require logical reasoning and problem-solving, potentially leading to lower scores on those components of the MoCA.

Psychosis often causes emotional distress, including anxiety and paranoia. Emotional distress can interfere with cognitive performance and increase overall cognitive load. Impact on MoCA: Individuals experiencing emotional distress may have difficulty concentrating, making decisions, and processing information accurately, affecting their performance on the MoCA.

It's essential to recognize that the MoCA is just one tool for assessing cognitive functioning, and its results should be interpreted in the context of an individual's clinical presentation. When assessing cognitive functioning in individuals with psychosis, clinicians should consider the potential impact of psychotic symptoms on test performance. Additionally, repeated assessments over time may be necessary to differentiate between cognitive deficits resulting from psychosis and those that may be present independently or due to other factors such as medication effects or comorbid conditions.

Study Purpose and Rationale

The overarching intention of this research project was to further understand the impact that formally assessed cognitive impairment via the Montreal Cognitive Assessment (MoCA) in psychiatric inpatients has on readmission rates. Overall, this study was designed to investigate an

efficient process to assess and identify patients that may be more vulnerable to relapse and readmission.

Verbal ability, verbal memory, and executive functioning are significantly associated with problem solving in psychiatric inpatients (Addington, & Addington, 2000). However, cognitive functioning via formal neuropsychological assessment in inpatient settings is rarely obtained (Addington, & Addington, 2000; Owusu et al., 2022). Neuropsychological testing is an underutilized resource within inpatient facilities due to cost, length of the test battery, and a limited number of neuropsychologists within these settings (Sieg et al., 2019). Implementing a neuropsychological screener can help identify deficits that may interfere with a patient's ability to adhere to a treatment plan, monitor medications, or actively participate in treatment programs; factors that are associated with readmission rates.

Increased emphasis and attention in psychiatric research have yielded more evidence to the neurobiology of cognition; especially in Schizophrenia, Bipolar Disorder, and Post Traumatic Stress Disorder (Sieg et al., 2019). Although many psychiatric clinicians are trained in cognitive assessments, such as the "clock test," "serial sevens," "numbers forward and backward," "proverb," and "word recall," in addition to common scenarios to evaluate judgment and insight, such as "mailing a letter," they are typically not completed during a standard psychiatric evaluation due to time limitations and high volume in the unit setting (Sieg et al., 2019). Neuropsychological testing can help to pinpoint cognitive deficits that interfere with intervention and the potential for optimal patient outcomes.

This study also examined the utilization of community resources, such as outpatient treatment, medication management, housing and shelter assistance, financial aid programs, and

insurance coverage. The relationship between community resource usage and readmission rates was examined. Community resource utilization data was obtained from the patient's psychosocial form archival data from a HIPAA-compliant database. Patients will be given a composite score, like the ACEs, in which each resource available will count as one as be utilized to assess return rates as a whole.

Implications for Psychiatric Facilities, Patients, & Policy

High rates of readmission may adversely impact healthcare spending. This study may aid the composition of focused health policies to address readmission factors and improve community-based care (Owusu et al., 2022). Incorporating a brief cognitive assessment in the evaluation of individuals with schizophrenia will improve detection of cognitive deficits and may inform treatment planning. Moreover, the results should also be corroborated with the patient's real-world functioning, for example, medication or treatment adherence, functional disability, and related outcomes. A plan that includes collaboration with other disciplines such as occupational therapy and memory-based inpatient care could either be implemented indefinitely or for a time-limited trial.

Objectives and Hypotheses

Objective 1: To formally assess cognitive impairment in psychiatric inpatients via the Montreal Cognitive Assessment (MoCA) and examine the relationship between MoCA score and inpatient readmission rate.

> *Hypothesis 1.1 (H1.1):* As MoCA score decreases, patient readmission rate will increase. Greater cognitive impairment as assessed by the MoCA will increase the likelihood of a patient being readmitted to an inpatient facility.

Objective 2: To examine the relationship between MoCA score and patient diagnosis.

Hypothesis 1.2 (H1.2): Patients who carry a diagnosis of a psychotic disorder will obtain lower MoCA scores.

Hypothesis 1.3 (H1.3): Patients who carry dual diagnoses, such a psychiatric diagnosis in addition to a substance use disorder diagnosis, will obtain lower MoCA scores.

Hypothesis 1.4 (H1.4): Patients who carry a psychotic disorder diagnosis or a dual diagnosis will be younger in age, compared to the overall sample.

Objective 3: To examine the relationship between readmission rate and patient demographics, such as sex, age, marital status, level of education, undomiciled at the time of testing, living alone, and local family support.

Hypothesis 1.5 (H1.5): Readmission rate will decrease with increasing age.

Hypothesis 1.6 (H1.6): Readmission rate will be lower for patients that are married, and higher for those who are single, separated, or divorced.

Hypothesis 1.7 (H1.7): Readmission rate will be greater for patients that obtained twelve or fewer years of education.

Hypothesis 1.8 (H1.8): Readmission rate will be greater for patients that were undomiciled at the time of testing.

Hypothesis 1.9 (H1.9): Readmission rate will be higher for patients who live alone compared to those who live with others.

Hypothesis 2.0 (H2.0): Readmission Rate will be reduced for patients receiving local family support.

Objective 4: To examine the relationship between the utilization of community resources, patient readmission rate, and diagnosis, age, marital status, and education.

Hypothesis 2.1 (H2.1): Readmission rate will decrease with increased community resource utilization (i.e., 1 or more).

Hypothesis 2.2 (H2.2): Diagnosis will have a relationship with community resource usage, with individuals diagnosed with mood disorders being more likely to utilize community resources compared to those with other diagnoses.

Hypothesis 2.3 (H2.3): Age will be positively correlated with community resource usage, indicating that older individuals are more likely to utilize community resources.

Hypothesis 2.4 (H2.4): Married individuals are less likely to use community resources compared to single or divorced individuals.

Hypothesis 2.5 (H2.5): Higher educational attainment is positively associated with community resource usage, with individuals with more education being more likely to utilize these resources.

Hypothesis 2.6 (H3.1): Individuals who are undomiciled or living in unstable housing situations have higher community resource usage compared to those with stable housing.

Method

This study utilized a cross-sectional design. Permission was obtained by the researcher from the Florida Institute of Technology Institutional Review Board (IRB) prior to the collection

of data to utilize the cooperating inpatient psychiatric hospital's archival data. Permission was also obtained from the president of the hospital to use the archival data, which was provided to the IRB of FIT as well. The data has been entered into a HIPAA-compliant EMR database. All personal identifying information was de-identified to ensure minimal risk of breaching confidentiality. Descriptive statistics, including assessment of means, standard deviations, and frequencies, were calculated for participant demographic variables, the primary outcomes, etc. All patient information was de-identified and random identification numbers were used for patient information on the excel sheet.

Participants and Recruitment

Eligible participants were required to be: (1) at least 18 years of age or older, (2) have been admitted to the inpatient psychiatric facility in which the study took place and (3) were ordered a MoCA by their provider starting in January 2020 (and beyond) as it is related to increased patient protection and placement expectations utilizing assessment data. These changes took place following a review of treatment programs by the facility, which created a mandate to increase discharge placement stability through increased use of assessment data during residents' hospitalization. Of the available assessment materials, neuropsychological screening tools and the identification of potential cognitive impairment within an inpatient setting would assist with overall patient success and decision-making outcomes. The program has since utilized neuropsychological testing to inform intervention with consideration to a patient's cognitive capacity and recommend compensatory strategies to aid with medication compliance.

Data Collection Procedures

The data that this study utilized is archival and has been entered into a HIPAA-compliant EMR database within the inpatient facility. MoCA score, total number of admissions, diagnosis, age, sex, marital status, level of education, race, insurance status, undomiciled at the time of testing, whether the patient lives alone or has local family support, medications at the time of testing, and reported community resource usage were collected from each participating patient chart. A sample of 135 patients, all of whom were given the MoCA between January 2020 and August 2023, were reviewed.

Demographics

Demographic characteristics that were collected included diagnosis, age, sex, marital status, level of education, race, insurance status, undomiciled at the time of testing, whether the patient lives alone or has local family support, medications at the time of testing, and reported community resource usage.

Measures

The Montreal Cognitive Assessment (MoCA)

The Montreal Cognitive Assessment (MoCA) has been utilized with individuals in acute inpatient psychiatric settings as a screening instrument with variable results (Rosca, Cornea, & Simu, 2020). It was developed in 2005 for the purpose of detecting mild cognitive impairment (MCI) and its' results have been shown to be highly sensitive and specific in the older adult population (Nasreddine et al., 2005). The MoCA is a brief neuropsychological screener that is succent enough to be administered at a patient's bedside. Total administration time typically runs

about 10 to 15 minutes. The MoCA assesses short-term memory, attention, working memory, and executive functions, which are commonly affected in patients admitted to a crisis stabilization unit, or inpatient psychiatric hospitals. Scores on the MoCA range from zero to 30 points, with a score of 25 or lower indicating a cognitive impairment (Rosca, Cornea, & Simu, 2020). This cut-off score of 25 or lower is widely recognized as a threshold for detecting cognitive impairment and potential dementia. Practice effects have been minimized as there are three versions of the MoCA, which test the same domains but differ in content (Rosca, Cornea, & Simu, 2020). The alternative versions of the MoCA present comparable reliability to the original test (Costa, et al., 2012). The MoCA has also been translated into more than 60 languages (Rosca, Cornea, & Simu, 2020). In addition, training is available on the MoCA website. Certification for the MoCA was made a mandatory requirement as of September 2019 (Rosca, Cornea, & Simu, 2020). The process of training is standardized so that testing is consistent among multiple raters, minimizing errors, and thus minimizing liability and misdiagnosis (Rosca, Cornea, & Simu, 2020).

Readmission Rate

The total admission rate per participant for a sample of 135 participants was collected. This was accessed within each patient chart, utilizing number of admissions as a metric for readmission rate. Length of stay was not a consideration for readmission, but was considered as a limitation for the number of admissions that could occur with a patient in any given year. All patient information was de-identified and random identification numbers were used for patient information on the excel sheet.

Community Resources

Reported community resource usage was calculated by reviewing a patient's psychosocial report which is detailed as part of each patient's discharge plan. Each community resource was assigned one point. For instance, if a patient reported attending a medication management program one time per month, they would be assigned one point. If a patient reported utilizing a service that provided them with shelter, food, and a part-time job, this community resource would be assigned three points. The total community resource usage points were calculated for each participating patient and entered into an on-site excel sheet. A list of community resources is provided in Appendix A. All patient information was de-identified and random identification numbers were used for patient information on the excel sheet.

Research Design and Data Analysis

This study utilized a cross-sectional design. The data utilized was archival and has been entered into a HIPAA-compliant EMR database within the inpatient facility. MoCA score, total number of admissions, and reported community resource usage were collected from each participating patient's chart. A sample of 135 charts of patients who were given a MoCA were reviewed.

Statistical Analysis

Descriptive statistics, means, standard deviations, and frequencies, were calculated for participant demographics and the primary outcomes (MoCA score, readmission rate, and community resource usage score). A community resource usage score was calculated for each participant based upon what was reported in their psychosocial report. A correlation was run to examine the relationship between MoCA score, readmission rate, and total community resource usage. A linear regression was utilized to examine whether MoCA score predicts readmission

rate. In addition, community resource usage score was examined as a mitigating factor to readmission rate. Data were analyzed through the Statistical Package for the Social Sciences (SPSS), version 25.0. All analyses were considered significant at the $p < .05$ level.

Results

Normality

The dataset exhibits a reassuring characteristic of normality, where the distribution of values follows a bell-shaped, symmetrical pattern. Kurtosis, a measure of the distribution's shape and propensity for extreme values, aligns with the characteristics of a standard, normal distribution. The normality in both distribution and kurtosis lends statistical robustness to the dataset, allowing for more confident and reliable analyses and inferences.

Collinearity Diagnostics

In the realm of regression analysis, managing multicollinearity is crucial to ensure the reliability and integrity of results. Acceptable levels for Variance Inflation Factor (VIF) and Tolerance are often determined to strike a balance between predictor variables' intercorrelation and their influence on the model. A VIF value that is above 10 or a Tolerance value that is below .10 is problematic, as it is indicative of multicollinearity. VIF values that are below 10 or Tolerance values that are above .10, are suggestive that the variance of regression coefficients is not substantially inflated due to multicollinearity. This threshold ensures that the model remains stable and that coefficient estimates remain reasonably interpretable. In this study, the VIF and Tolerance values were examined for all four models. All VIF values were below 10 and Tolerance values were above .10, suggesting that the variance of regression coefficients was not substantially inflated due to multicollinearity.

Participants

Sample Demographics

A total of 135 participants were included in this study with 49.6% of participants identified as male (*n* = 67) and 50.4% identified as female (*n* = 68). The mean age was 69.09 years with a standard deviation of 8.25. Regarding participant ethnicity, 80.7% (*n* = 109) of the participants identified as White/Caucasian, 11.9% (*n* = 16) as Black, 5.2.% (*n* = 7) as Hispanic, and 2.2% (*n* = 3) as Asian. In terms of marital status, 22% (*n* = 30) reported themselves to be single, 3% (*n* = 4) had a partner, 16% (*n* = 22) were married, 33% (*n* = 45) were divorced, 22.2% (*n* = 30) were widowed, and 3% (*n* = 4) were separated. The mean education level was 12.84 years with a standard deviation of 2.15. Regarding health insurance, 92.6% (*n* = 125) were insured and 6.7% (*n* = 9) were uninsured. In terms of housing and living situation, 23.7% (*n* = 32) reported being undomiciled and 53.3 (*n* = 72) lived alone. 41.5% (*n* = 56) reported having local family support. Participant demographic information is presented in Table 1.

Descriptive Statistics

Diagnosis

In terms of depressive disorders, 35.6% (*n* = 48) of the sample had a diagnosis of Major Depressive Disorder, 12.6% (*n* = 17) had Major Depressive Disorder with psychotic features, 7.4% (*n* = 10) were given Major Depressive Disorder with Alcohol Use Disorder, and 12.6% (*n* = 17) had Major Depressive Disorder with a Co-Occurring disorder (e.g., Cocaine Use Disorder or Post Traumatic Stress Disorder).

10.4% (*n* = 14) of the sample had received a diagnosis of Bipolar 1, 1.5% (*n* = 2) had received a Bipolar 1 with a Co-Occurring Disorder, 1.5% (*n* = 2) had received a diagnosis of

Bipolar 2, and 2.2% (*n* = 3) had received a Bipolar 2, Co-Occurring with another disorder (e.g., Cocaine Use Disorder, Cannabis Use Disorder, or Post Traumatic Stress Disorder).

Regarding psychotic disorders, 7.4% (*n* = 10) had received a diagnosis of Schizophrenia, 3.7% (*n* = 5) had received a schizoaffective disorder, and 1.5% (*n* = 2) had received a schizoaffective disorder with a co-occurring disorder (e.g., Cocaine Use Disorder, Cannabis Use Disorder, or Post Traumatic Stress Disorder).

Other diagnoses included Other Disruptive Impulse Control Disorders .7% (*n* = 1), Acute Stress Disorder .7% (*n* = 1), and Persistent Depressive Disorder 1.5% (*n* = 2). 41.5% (*n* = 56) of the sample had received a Co-Occurring diagnosis and 25.9% (*n* = 35) had received a Co-Occurring substance use diagnosis. Participant diagnoses information is presented in Table 2.

Montreal Cognitive Assessment (MoCA) Score

All 135 participants completed the Montreal Cognitive Assessment. The scores ranged from a low of 2 to a high of 28. The average score for this sample was 17.20, with a standard deviation of 5.48. Participant MoCA score information is presented in Table 3.

Readmission Rate

According to the facility's electronic medical record system, the average readmission rate across all patients since 2014 was 1.89 with a standard deviation of 2.68. The average readmission rate for this study's sample was 3.13 per individual with a standard deviation of 3.97. Readmission rates in this study's sample ranged from a minimum of 1 to a high of 26 admissions. The average number of times a patient was involuntarily hospitalized for this study's sample was 2.67 with a standard deviation of 3.27, ranging from a low of 0 to high of 26. Voluntary admissions have an average of .44 for this sample with a standard deviation of 1.49,

ranging from a low of 0 to a high of 11. Information on participant readmission rate and admission type is presented in Table 4.

Community Resource Usage Score

Overall, patients in this sample reported taking advantage of an average of .96 of the Community Resources available to them, with a standard deviation of 1.89, ranging from 0 to 6. 46.7% (n = 63) reported utilizing no community resources at all. 29.6% (n = 49) reported using at least 1 community resource. 8.1% (n = 11) reported utilizing at least two community resources, while 13.3% (n = 18) used at least three. 1.5% (n = 2) utilized at least 4 community resources, while .7% (n = 1) used at least six. Patients reported utilizing outpatient medication management, outpatient therapy, forensic mental health programs and case management, nursing home services, social security, homeless shelters, soup kitchens, assisted living facilities, Alzheimer's support groups, caregiver support groups, senior living advisors, long-term case managers, Meals on Wheels, primary care physicians, Alcoholics/Narcotics Anonymous, and Veterans' Association Clinics.

Statistical Analyses

MoCA Score and Readmission Rate

A Pearson's correlation was conducted to explore the relationships between the variables MoCA score, readmission rate, community resource usage, involuntary hospitalizations, and voluntary admissions. MoCA score (M = 17.20, SD = 5.49) was positively correlated with number of involuntary hospitalizations (M = 2.67, SD = 3.27), r = .182, $p < .05$. Total readmission rate (M = 3.13, SD = 3.97) was positively correlated with number of involuntary hospitalizations (M = 2.67, SD = 3.27), r = .933, $p < .01$, and voluntary admissions (M = 0.44,

SD = 1.49), $r = .615$, $p < .01$. Information for MoCA Score and Readmission Rate are presented in Table 5.

A linear regression was conducted to examine if MoCA score predicts the number of patient readmissions to an inpatient psychiatric facility (Objective 1). MoCA score (*M* = 17.20, *SD* = 5.49) did not significantly predict patient readmission rate (*M* = 3.13, *SD* = 3.97), $b = .098$, $p > .01$, which is not in supportive of Hypothesis 1.1. MoCA score did not explain a significant amount of the variance in patient readmission rate $R^2 = .018$, $F(1, 133) = 2.49$, $p > .01$. MoCA score (*M* = 17.20, *SD* = 5.49) also did not significantly predict the number of patient involuntary hospitalizations, or voluntary admissions (*M* = 2.67, *SD* = 3.27), $b = .108$, $p > .01$. MoCA score did not explain a significant amount of the variance in the number of patient involuntary hospitalizations, $R^2 = .033$, $F(1, 133) = 42.28$, $p > .01$. MoCA score (*M* = 17.20, *SD* = 5.49) also does not predict the number of voluntary admissions (*M* = 0.44, *SD* = 1.49), $b = -.010$, $p > .01$, which is not in support of Hypothesis 1.1. MoCA score also did not explain the amount of variance in number of patients' voluntary admission rates, $R^2 = .01$, $F(1, 133) = .437$, $p > .01$. Linear regression results for MoCA Score and Readmission Rate are presented in Table 6.

MoCA Score and Diagnosis

The average MoCA score was calculated for participants with a diagnosis of a psychotic disorder (*n=34*) and was 16.26, which is lower than the overall sample mean MoCA score of 17.20. The average MoCA score was also calculated for participants with a co-occurring substance use diagnosis (*n=33*) and was 17.30, which is slightly higher than the overall sample mean MoCA score of 17.20.

A point-biserial correlation was conducted to examine the relationship between MoCA score, patient diagnosis, and age (Objective 2). MoCA score (M = 17.20, SD = 5.49) was positively correlated with a diagnosis of Bipolar 2 Co-Occurring (M = .02, SD = .15), r = .197, p < .05. MoCA score (M = 17.20, SD = 5.49) was negatively correlated with a diagnosis of Schizophrenia (M = .74, SD = .26), r = -.222, p < .01. Age (M = 69.09, SD = 8.25) was positively correlated with a diagnosis of Major Depressive Disorder (M = .36, SD = .48), r = .352, p < .01 and a lack of a Co-Occurring Diagnosis (M = .59, SD = .49), r = -.209, p < .05, which supports hypothesis 1.4. Age was also negatively correlated with readmission rate (M = 3.13, SD = 3.97), r = -.284, p < .01, and a diagnosis of Bipolar 1 (M = .10, SD = .31), r = -.181, p < .05. Readmission rate (M = 3.13, SD = 3.97) was positively correlated with Major Depressive Disorder and Alcohol Use Disorder (M = .074, SD = .26), r = .191, p < .05, and Bipolar 1 disorder (M = .10, SD = .31), r = .223, p < .01. Information for MoCA score and diagnosis can be viewed in Table 7.

A linear regression was conducted to examine if a diagnosis of either a psychotic disorder or a co-occurring disorder will predict MoCA scores. A diagnosis of Major Depressive Disorder with psychotic features (M = .13, SD = .33), b = .031, p > .01, Schizophrenia (M = .74, SD = .26), b = -.222, p > .01, Schizoaffective (M = .037, SD = .190), b = .072, p > .01, and Schizoaffective with a Co-Occurring disorder (M = .015, SD = .121), b = -.072, p > .01, did not significantly predict MoCA scores (M = 17.20, SD = 5.49); which is not in support of Hypothesis 1.2. Additionally, a diagnosis of a psychotic disorder did not explain a significant amount of the variance in MoCA score, R^2 = .059, $F(1, 133)$ = 2.004, p > .01. Linear regression results for MoCA score and diagnosis can be viewed in Table 8.

The diagnoses of a co-occurring disorder did not significantly predict MoCA score which is not in support of Hypothesis 1.3. A diagnosis of Major Depressive Disorder with Alcohol Use Disorder (M = .074, SD = .262) b = -.029, p > .01, Major Depressive Disorder with a Co-Occurring disorder (M = .126, SD =.333), b = -.658, p > .01, Bipolar 1 with a Co-Occurring disorder (M = .015, SD = .121), b = 2.871, p > .01, Bipolar 2 with a Co-Occurring disorder (M = .022, SD = .148), b = 7.205, p > .01, and Schizoaffective with a Co-Occurring disorder (M = .015, SD = .121), b = -3.129, p > .01, did not significantly predict MoCA score (M = 17.20, SD = 5.49). A diagnosis of a co-occurring disorder did not explain a significant amount of the variance in MoCA score, R^2 = .049, $F(1, 133)$ = 1.334, p > .01. Linear regression results for MoCA score and co-occurring diagnoses can be viewed in Table 9.

Readmission Rate and Demographic Variables

A point-biserial correlation was conducted to explore the relationships between patient demographics and readmission rates (Objective 3). Readmission rate (M = 3.13, SD = 3.97) was negatively correlated with Age (M = 69.09, SD = 8.25) r = -.284, p < .01, which is in support of Hypothesis 1.5. Having family support (M = .415, SD = .495) r =-.179, p < .05, which is in support of Hypothesis 2.0. Readmission rate was positively correlated with having a partner, but not being married or single, (M = .163, SD = .371) r = .193, p < .05, which is not in support of Hypothesis 1.6. Hospitalization rates were also higher for patients that were living alone (M = .533, SD = .501) r = .184, p < .05, at the time of admission which is in support of Hypothesis 1.9. Information on readmission rate and patient demographics can be viewed in Table 7. Values for readmission rate and demographic variables can be viewed in Table 10.

A linear regression was conducted to examine if patient demographics predicted readmission rate. Age, sex, race, marital status, level of education, insurance status, undomiciled at the time of testing, living alone, and having local family support available all did not significantly predict readmission rate. Patient demographics did not explain a significant amount of the variance in readmission rate, $R^2 = .205$, $F(1, 133) = .019$, $p > .01$. Linear regression results for demographic variables and readmission rate can be viewed in Table 11.

Community Resource Usage and Demographic Variables

A point-biserial correlation was conducted to explore the relationships between patient demographics and community resource usage scores (Objective 4). Community resource usage ($M = .96$, $SD = 1.187$) was positively correlated with Age ($M = 69.09$, $SD = 8.25$) $r = .183$, $p < .05$ which is in support of Hypothesis 2.3. Community resource usage ($M = .96$, $SD = 1.187$) was negatively correlated with having a partner, but not being married or single, ($M = .163$, $SD = .371$) r = -.190, $p < .05$. Information on patient demographics and community resource usage scores can be viewed in Table 12.

A linear regression was conducted to examine if patient demographics predicted community resource usage. Age, sex, marital status, level of education, undomiciled at the time of testing, living alone, and having local family support available does not significantly predict community resource usage. Patient demographics did not explain a significant amount of the variance in community resource usage, $R^2 = .205$, $F(1, 133) = .073$, $p > .01$. Linear regression results for demographic variables and community resource usage can be viewed in Table 13.

Discussion

The primary intention of this research project was to further understand the impact of assessing cognitive impairment in psychiatric patients, as a mediating factor on readmission rates. Mild cognitive dysfunction impacts a patient's functional outcomes (Bowie & Harvey, 2006; Davis et al., 2012; Marcantonio, et al., 2001). Little information exists to guide best practices in the treatment of adults with cognitive impairment who are hospitalized for acute conditions (Davis et al., 2012). Overall, this study aimed to investigate the utilization of brief cognitive screeners in identifying patients that may be more vulnerable to relapse and readmission.

Although all objectives demonstrated significant correlations among the variables, there were no significant predictive models. All VIF values were below 10 and Tolerance values were above .10, suggesting that the variance of the regression coefficients was not substantially inflated due to multicollinearity. Therefore, the variables are related, however, they do not demonstrate predictive relationships.

MoCA score had a positive relationship with the number of patient admissions. A higher admission rate was associated with a higher MoCA score. This may partially be explained by Age (M = 69.09, SD = 8.25) having a negative relationship with readmission rate and a positive relationship with community resources. Commonly reported community resources utilized for patients over 65 were senior living advisers, Alzheimer's support groups, nursing homes, Meals on Wheels, weekly home health aides, social security, and family support or education groups. Many of the community resource suggestions are supplied, and therefore influenced, via the treatment team and were informed by the patient's MoCA score obtained prior to discharge. In general, the reported community resource suggestions for older patients with cognitive

impairment were numerous, more varied in facility type, and more permanent in nature, such as several local assisted living facilities. This also may explain the negative relationship between age and readmission rate. The commonly reported community resources being utilized for patients under 65 were outpatient medication management, outpatient therapy, a forensic mental health program, a local shelter and soup kitchen, the Veteran's Affairs clinic, and a temporary residential. Reported outpatient resources for the younger individuals in this sample had a shorter duration and required some level of autonomy. In addition, they were less varied in facility type as many of them, such as the outpatient medication management, outpatient therapy clinic, the forensic mental health program, and residential housing were all operated by the same facility that this study's inpatient data was taken. These findings may reflect a lack of public mental healthcare facilities in the geographical area in which this study took place.

It is important to note that each community resource was given a score of 1. However, each community resource is not created equal. A shelter that provides housing, a stable meal for each day, in addition to a part time job is weighted the same as a medication management appointment that only is utilized one time per month. In addition, access to all resources is a limitation and the researcher acknowledges the unfairness in the attempt to quantify resource usage in this manner.

Readmission to a psychiatric facility can occur for many different reasons, including medication adjustments, crisis intervention and re-stabilization, or social support needs, in addition to limitations in cognitive functioning. The positive relationship between MoCA score and readmission rate may reflect cognitive abilities but not necessarily address the underlying psychiatric issues. Patients with higher cognitive functioning may be more aware of their mental

health symptoms and are more likely to seek help and comply with treatment plans. This may lead to more frequent admissions as they are able to seek help to address their mental health concerns.

The average MoCA score was about one point lower (16.26) for participants with a diagnosis of a psychotic disorder than the overall sample (17.20). Although this is not significantly lower, these scores may reflect some of the cognitive impairments in memory, attention, and problem solving that are associated with having a psychotic disorder diagnosis. The average MoCA for participants with a co-occurring substance use diagnosis was 17.30, which was slightly higher than the overall sample mean. Individuals with co-occurring substance use disorders have achieved short-term sobriety due to their admission at the time of the assessment, potentially leading to improved cognitive functioning.

Higher MoCA scores were associated with diagnoses of Bipolar 2 Co-Occurring, Major Depressive Disorder, and a lack of a Co-Occurring diagnosis. Properly treated mood symptoms may, in turn, improve cognitive functioning. Patients who lack a co-occurring diagnosis may have a clearer clinical presentation, making it easier to identify and address primary mental health concerns (Bowie, & Harvey, 2006; Caspi, 2003). This may lead to better treatment outcomes and cognitive functioning. Patients without co-occurring diagnoses may experience fewer overlapping symptoms. They may receive targeted treatment and psychoeducation, addressing the specific symptoms and cognitive impairments, potentially resulting in higher MoCA scores.

Lower MoCA scores were associated with diagnoses of Bipolar 1 and Schizophrenia, which may have severe courses that can be associated with cognitive deficits. Cognitive

impairments can impact attention, memory, executive functioning, and processing speed, which may result in lower MoCA scores (Bowie, & Harvey, 2006; Caspi, 2003). Bipolar 1 and Schizophrenia have been linked to neurobiological abnormalities such as alterations in ventricle size and neurotransmitter functioning (Bowie, & Harvey, 2006; Caspi, 2003). These biological factors can contribute to cognitive dysfunction. In addition, the severity of symptoms and the frequency of mood or psychotic episodes can impact cognitive functioning. During manic or psychotic episodes, patients with Bipolar 1 and Schizophrenia may experience cognitive disorganization and impairment. The negative symptoms of schizophrenia, in particular, can be associated with cognitive deficits as they impact motivation and engagement in cognitive tasks (Bowie, & Harvey, 2006; Caspi, 2003). During periods of euthymia, patients may perform better on cognitive assessments compared to when they are manic or severely depressed. A patient's diagnosis and present symptoms may not only affect their ability to manage their own symptoms, but they may also impact the results of their cognitive testing. The MoCA is often thought of as a test that can be conducted anytime, even at a patient's bedside. However, appropriate timing in cognitive testing is important and must be considered in the interpretation of the results.

Both Bipolar 1 and Schizophrenia are often chronic conditions with a lifelong course. Prolonged exposure to the symptoms and stress associated with these disorders may potentially have a cumulative negative impact on cognitive functioning. Some patients with these diagnoses may not have received appropriate treatment or may have limited access to mental healthcare, as demonstrated earlier in this discussion. Untreated or undertreated serious mental illness may have a relationship with severe cognitive impairment. Also, other medical and psychiatric comorbidities can further contribute to cognitive deficits. Lastly, sometimes access to community resources can be compounding; for example, if a patient is unable to obtain their

medication, they may not find access to supplied housing and/or feel comfortable attending follow-up appointments.

Readmission rate demonstrated a positive relationship with Major Depressive Disorder Alcohol Use Disorder, and Bipolar 1 disorder. Severe depression, manic episodes, or alcohol withdrawal can lead to acute crises that necessitate inpatient treatment. The positive relationship between readmission rate, Major Depressive Disorder Alcohol Use Disorder, and Bipolar 1 disorder reflects the complex and multifaceted nature of these conditions. Acute episodes, crisis management needs, safety concerns, and challenges associated with co-occurring disorders all contribute to the likelihood of readmissions.

Readmission rate was negatively correlated with being African American, Hispanic, and Asian. This is a representation of the lack of diversity in this primarily Caucasian sample. Being Female was negatively correlated with readmission rate which may demonstrate a gender difference in seeking and engaging in mental health treatment, social support networks, and access to care. Gender is just one of the many factors that influence mental health outcomes and individual experiences can vary widely.

Having local family support was also negatively correlated with readmission rate. Family support can provide emotional, practical, and social support to individuals with mental health conditions. Social support can help individuals cope with stressors, manage their symptoms, adhere to their medication regimen, and prevent crises that may lead to readmissions. Family members who are actively involved in a patient's mental health care can often recognize the early signs of relapse or worsening symptoms. They can help intervene early, potentially avoiding the need for inpatient readmission. Families can act as advocates for their loved ones

within the healthcare system as they can communicate with treatment providers as historians or share information about patient progress. Families can also work with mental health providers to develop safety plans and crisis intervention strategies, potentially mitigating the occurrence of inpatient readmission. Family support can also reduce feelings of isolation and disconnectedness, which are risk factors for suicide (Joiner, 2005).

Readmission rate was positively correlated with having a partner, but not being married or single. The nature and dynamics of a relationship can significantly impact an individual's mental health. Having a partner, even if not legally married, can introduce unique stressors, conflict, or support dynamics that may affect mental health and contribute to readmission rate.

Hospitalization rates were also higher for patients that were living alone. Individuals who live alone but may have limited access to immediate support during times of crisis, or when experiencing severe mental health symptoms. The absence of someone who can provide intervention, assistance, or seek help may lead to a higher likelihood of hospitalization. People who live alone may also delay seeking help for mental health concerns due to a lack of immediate support or encouragement to seek treatment. Delayed intervention can result in symptoms worsening and need for hospitalization. Lastly, living alone comes with the potential for associated financial pressure, loneliness, and a lack of social support.

Community resource usage was negatively correlated with having a partner, but not being married or single. The nature of the relationship and the dynamics within it can influence an individual's willingness and ability to seek out community resources. These results suggest an intriguing dynamic within the context of community support. It may indicate that individuals in committed relationships (having a partner) already have access to a built-in support system,

thereby reducing their reliance on external community resources. On the other hand, those who are single or married may find it necessary to seek support from the broader community due to the absence of or different nature of support within their relationship status. This finding underscores the complex interplay between personal relationships and community resources in meeting individuals' needs. It highlights the importance of tailoring support systems to diverse relationship statuses for more effective community interventions.

Limitations

One of the major limitations of this retrospective study was the reliance on an archival dataset, which hindered the range of available information specific to each participant included in the analysis. Thus, the total sample size was limited to patient data in which the MoCA had already been completed. In addition, community resource usage scores could be computed only from what was reported by each patient and recorded in the medical chart. This may mean that the community resource scores may not be exact as some patients may not have reported their usage accurately, or usage may not have been recorded appropriately.

Regarding participant ethnicity, 80.7% (n = 109) of the participants identified as White/Caucasian. A lack of patient diversity is a limitation of this study. The need for a more diverse sample to achieve representativeness is paramount in research and data analysis. A diverse sample ensures that the findings and conclusions drawn from the study are more broadly applicable to the population of interest. The results of this study lack generalizability.

Although power analyses deemed the number of participants for this study as adequate; the sample size remained small. Working with a small sample size comes with inherent limitations that can impact the reliability and generalizability of findings. The most significant

limitation is reduced statistical power, which increases the risk of Type II errors, meaning that true effects can be overlooked. Additionally, this sample does not adequately represent the diversity and variability present in the larger population, limiting the external validity of the study. This study lacks robust conclusions. Subgroup differences were difficult to assess and the exploration of complex relationships between variables was hindered by the small sample size.

The orders for neuropsychological testing were mostly completed on one of the hospital's buildings due to the nature of the cognitive concerns. This building services primarily insured, older individuals. Regarding health insurance, 92.6% (n = 125) were insured and 6.7% (n = 9) were uninsured. The facility also has a crisis intervention unit which services primarily uninsured, younger, and sometimes undomiciled patients. The addition of uninsured, younger, and undomiciled individuals would diversify the study's demographic composition, better reflecting a broader cross-section of society. This diversity in the sample population could have led to a more comprehensive understanding of the research topic and enhanced the study's external validity.

The impact of psychotropic medication and illicit drug use on MoCA score is unknown and a limitation of this study. 100% of the sample was taking a psychotropic medication regimen at the time of testing. No participant in the sample were documented as using illicit drugs at the time of testing, however, there may be cognitive impacts from a drug use history; including substance use as reason for admission and occurring up until their hospitalization. While it is well recognized that medications and illicit drugs have the potential to impact cognitive functioning, the precise nature and extent of these effects on MoCA score in this study is unknown, can vary widely between individuals, and between different medications. Similarly, illicit drug use encompasses a broad spectrum of substances, each with distinct cognitive

implications. The degree of cognitive impairment can depend on factors such as frequency, duration, and dose of the substance, in addition to variability within the individual patient. Therefore, while the MoCA has the potential to provide valuable insights into cognitive functioning, a comprehensive understanding of how medication and prior illicit drug use influence cognitive abilities necessitates a more nuanced examination which is more in-depth than what can be collected from an archival dataset.

Areas for Future Research

Future research should be longitudinal and investigate cognitive changes over time in psychiatric inpatients who are regularly readmitted. This can be accomplished with several alternative versions of the MoCA or the Repeatable Battery for the Assessment of Neuropsychological Status (R-BANS). Longitudinal research can provide insights into the trajectory of cognitive functioning during hospitalization and after discharge, helping in the development of targeted interventions. It may also help to examine factors influencing cognitive decline and recovery in psychiatric patients. This research could identify predictors of cognitive improvement, potentially guiding treatment strategies. Upcoming longitudinal research should also study cognitive changes in patients during the transition from inpatient to community-based care. This transition may impact cognitive functioning and the risk of readmission.

Future studies should investigate the different domains of the MoCA by diagnosis to see if cognitive deficits are more generalized or follow domain-specific patterns and have a neurocognitive profile. In addition, the MoCA should be normed for different groups of patients, such as patients with schizophrenia and bipolar disorder. As discussed earlier in this study, the MoCA was utilized in diagnosing cognitive impairment in psychiatric inpatients (Gierus et al., 2015). A MoCA threshold score of 23 was the least accurate in terms of differentiating

neurocognitive disorders from psychotic disorders (Gierus et al., 2015). Future research that seeks to norm the MoCA for different patient groups should also investigate cut scores that represent good sensitivity and specificity for each grouping. This research may help to develop and test cognitive rehabilitation interventions tailored to the needs of psychiatric inpatients. Additionally, the effectiveness of current interventions can be assessed and advanced, potentially improving cognitive function and overall outcomes.

Upcoming research should also investigate the impact of psychiatric medications on cognitive functioning. It should explore and seek to define how different drug classes affect cognitive performance and whether medication adjustments can mitigate cognitive side effects.

Studies could also investigate how psychosocial factors such as social support, stress, being undomiciled, and trauma history impact cognitive function in psychiatric inpatients. This research could shed light on the interplay between mental health and cognitive performance. Cultural and ethnic variations in cognitive assessment scores among psychiatric inpatients should be examined. This could highlight potential biases in assessment tools and lead to more culturally sensitive approaches.

Readmission rate or patient recidivism requires a universal definition for research purposes. It may be helpful to examine the relationship between readmission rate and the length of patient stay in an inpatient facility. As demonstrated by this study, readmission rate to psychiatric facilities is a multifaced issue influenced by a multitude of factors, and not always attributable to the shortcomings on the part of the facility. Patients grappling with mental health challenges often face complex and dynamic circumstances which occur outside of the facility and are quite literally outside of the control of healthcare providers. As demonstrated by this

study, these factors include the availability and accessibility of community mental health resources, the stability of a patient's social support system, the effectiveness of outpatient treatment plans, and individual patient factors such as diagnosis chronicity, co-occurring disorders, social support, and life-stressors. Furthermore, readmission can sometimes be a necessary and planned part of a patient's recovery journey, as evidenced by the argument which sought to explain the positive relationship between MoCA score and readmission rate. Inpatient facilities play a crucial role in our healthcare system. However, reducing readmission rates requires a comprehensive approach that addresses a broader ecosystem of factors, which impacts the well-being of individuals living with mental health conditions.

Each of these future research directions has the potential to enhance our understanding of cognitive functioning in inpatient psychiatric populations, inform clinical practice, and contribute to improving the quality of care and outcomes for individuals with mental health disorders.

Clinical Implications

There are many ways that this research informs clinical practice. While a higher readmission rate to a psychiatric facility being associated with a higher MoCA score may seem paradoxical, multiple factors, including the severity of mental illness, reasons for readmission, and patient characteristics contribute to this study's results. Tailoring treatment and rehabilitation strategies to individual cognitive profiles may enhance clinical outcomes. Understanding the reasons for readmission is essential. Identifying these reasons can inform targeted interventions that may reduce the risk of readmission. Individual patient characteristics, such as age, co-occurring conditions, and psychosocial factors, play a significant role in cognitive function. Clinicians should conduct comprehensive assessments that consider these factors to better

understand cognitive performance and its relationship to readmission risk. A nuanced approach to cognitive assessment is warranted.

The association between higher readmission rates and higher MoCA scores in psychiatric patients highlights the need for individualized and multifaceted assessments and interventions. Clinicians must consider the multifactorial nature of cognitive function in this population and strive to address the complex interplay of mental illness severity, readmission reasons, and patient characteristics to optimize patient care and outcomes.

Assessing cognitive deficits within psychiatric settings may play a pivotal role in understanding and addressing the complex issue of readmission rates. While demographic factors and limited access to community resources are undoubtedly crucial considerations, evaluating cognitive functioning adds an extra layer of insight that may have been traditionally overlooked. Cognitive deficits, often linked to conditions like schizophrenia, bipolar disorder, or major depressive disorder, can significantly impact an individual's ability to manage their mental health effectively. Patients with impaired cognitive functioning may struggle with medication adherence, coping skills, and daily life tasks, ultimately increasing the risk of relapse and readmission. By identifying and addressing cognitive deficits alongside demographic and resource-related challenges, psychiatric healthcare providers can tailor interventions and support services more precisely, improving the overall quality of care and reducing the likelihood of recurrent hospitalizations.

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Tables

Table 1.

Variable	*Total Sample (N = 135)*	
	M	(SD)
Age	69.09	(8.25)
	N	(%)
Gender		
Female	68	(50.4%)
Male	67	(49.6%)
Race		
White/Caucasian	109	(80.7%)
Black	16	(11.9%)
Hispanic	7	(5.2%)
Asian	3	(2.2%)
Education Level		
7th Grade	2	(1.5%)
8th Grade	1	(.7%)
9th Grade	6	(4.4%)
10th Grade	2	(1.5%)
12th Grade	76	(56.3%)
14 Years	29	(21.5%)
16 Years	13	(9.6%)
18 Years	5	(3.7%)
21 Years	1	(.7%)
Marital Status		
Single	30	(22.2%)
Partnered	4	(3.0%)
Married	22	(16.3%)
Divorced	45	(33.3%)
Widowed	30	(22.2%)
Separated	4	(4%)
Health Insurance		
Insured	125	(92.6%)
Indigent	9	(6.7%)
Housing		
Have Housing	103	(76.3%)
Undomiciled	32	(23.7%)
Living environment		
Lived Alone	72	53.3%)
Lived with Others	63	(46.7%)
Local Family Support		
Had Family Support	56	(41.5%)
Did not have Family Support	44	(58.5%)

Descriptive Statistics of Participant Demographic Information

Table 2.

Participant Diagnoses Information

Variable		*Total Sample (N = 135)*
	N	(%)
Depressive Disorders		
MDD	48	(35.6%)
MDD psychotic features	17	(12.6%)
MDD with AUD	10	(7.4%)
MDD Co-Occurring	17	(12.6%)
PDD	2	(1.5%)
Bipolar Disorders		
Bipolar 1	14	(10.4%)
Bipolar 1 Co-Occurring	2	(1.5%)
Bipolar 2	1	(1.5%)
Bipolar 2 Co-Occurring	2	(2.2%)
Psychotic Disorders		
Schizophrenia	10	(7.4%)
Schizoaffactive	5	(3.7%)
Schizoaffective Co-Occurring	2	(1.5%)
Other Disorders		
Disruptive Impulse Control	1	(.7%)
Acute Stress Disorder	1	(.7%)
Co-Occurring Diagnoses		
Mental Health	56	(41.5%)
Substance Abuse	35	(25.9%)

Table 3.

MoCA Score Frequencies

2	2	1.5%
3	1	.7%
4	1	.7%
7	2	1.5%
8	2	1.5%
9	3	2.2%
10	4	3.0%
11	4	3.0%
12	7	5.2%
13	7	5.2%
14	9	6.7%
15	9	6.7%
16	5	3.7%
17	8	5.9%
18	11	8.1%
19	13	9.6%
20	9	6.7%
21	9	6.7%
22	8	5.9%
23	4	3.0%
24	3	2.2%
25	4	3.0%
26	7	5.2%
27	2	1.5%
28	1	.7%

Table 4.
Readmission Frequencies

Total Sample (N = 135)

Readmission Rate	Frequency	Percent
1	57	42.2%
2	27	20%
3	16	11.9%
4	13	9.6%
5	8	5.9%
6	2	1.5%
7	2	1.5%
8	4	3.0%
11	1	.7%
15	1	.7%
18	1	.7%
19	1	.7%
24	1	.7%
26	1	.7%

Table 5.

Pearson's Correlation Values for MoCA Score and Readmission Rate

		MoCA Score	Total Readmissions	Community Resource Usage Score	Baker Acts	Voluntary Admissions
1	Pearson Correlation		0.136	0.016	.182*	-0.038
	Sig. (2-tailed)		0.117	0.854	0.035	0.659
2	Pearson Correlation			0.077	.933**	.615**
	Sig. (2-tailed)			0.374	0	0
3	Pearson Correlation				0.041	0.111
	Sig. (2-tailed)				0.636	0.201
4	Pearson Correlation					.290**
	Sig. (2-tailed)					0.001

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6.

Summary of Linear Regression Analysis for MoCA Score and Total Readmissions

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.136[a]	0.018	0.011	3.943	0.018	2.494	1	133	0.117

**p<.01*

Table 7.

Pearson's Correlation Values for MoCA Score and Patient Diagnosis

		MoCA Score	Total Readmissions	Age	YES Co-Occurring Diagnosis	Major Depressive Disorder (MDD)	MDD with Psychotic Features	MDD with Alcohol Use Disorder (AUD)	MDD with Co-Occuring Disorder	Bipolar 1	Bipolar 1 with Co-Occuring Disorder	Bipolar 2	Bipolar 2 with Co-Occurring Disorder	Schizophrenia	Schizoaffective	Schizoaffe with Co-Occurring Disorder	Other Disruptive Impulse Contol Disorder	Acute Stress Disorder	Persistent Depressive Disorder	Yes Substance Use Diagnosis
1	Pearson Correlation		0.136	-0.095	-0.020	-0.036	0.031	-0.005	-0.051	0.121	0.063	0.130	.197*	-.222**	0.072	-0.072	-0.082	-0.114	0.007	0.025
	Sig. (2-tailed)		0.117	0.273	0.820	0.681	0.721	0.953	0.560	0.163	0.469	0.133	0.022	0.010	0.408	0.408	0.343	0.189	0.938	0.776
2	Pearson Correlation			-.284**	-.179*	-0.157	-0.052	.191*	0.011	.223**	-0.035	-0.050	-0.018	-0.009	-0.046	-0.035	-0.046	-0.046	0.043	0.088
	Sig. (2-tailed)			0.001	0.038	0.069	0.552	0.026	0.904	0.009	0.687	0.561	0.840	0.917	0.597	0.687	0.592	0.592	0.623	0.310
3	Pearson Correlation				.209*	.352**	-0.107	0.062	-0.053	-.181*	-0.024	-0.054	-0.142	-0.062	-0.098	-0.068	0.052	0.010	-0.039	-0.085
	Sig. (2-tailed)				0.015	0.000	0.215	0.473	0.541	0.036	0.785	0.537	0.100	0.478	0.260	0.430	0.552	0.912	0.656	0.329
4	Pearson Correlation					.191*	-0.048	-.181*	-0.093	0.009	0.021	0.021	-0.025	-0.123	0.153	0.021	-0.073	0.103	-0.103	-.189*
	Sig. (2-tailed)					0.026	0.583	0.036	0.283	0.913	0.807	0.807	0.774	0.154	0.076	0.807	0.402	0.236	0.233	0.028
5	Pearson Correlation						-.282**	-.210*	-.282**	-.253**	-0.091	-0.091	-0.112	-.210*	-0.146	-0.091	-0.064	-0.064	-0.091	-.439**
	Sig. (2-tailed)						0.001	0.014	0.001	0.003	0.293	0.293	0.196	0.014	0.092	0.293	0.460	0.460	0.293	0.000
6	Pearson Correlation							-0.107	-0.144	-0.129	-0.047	-0.047	-0.057	-0.107	-0.074	-0.047	-0.033	-0.033	-0.047	-.225**
	Sig. (2-tailed)							0.215	0.096	0.136	0.592	0.592	0.510	0.215	0.391	0.592	0.706	0.706	0.592	0.009
7	Pearson Correlation								-0.107	-0.096	-0.035	-0.035	-0.043	-0.080	-0.055	-0.035	-0.024	-0.024	-0.035	.478**
	Sig. (2-tailed)								0.215	0.267	0.690	0.690	0.623	0.356	0.523	0.690	0.778	0.778	0.690	0.000
8	Pearson Correlation									-0.129	-0.047	-0.047	-0.057	-0.107	-0.074	-0.047	-0.033	-0.033	-0.047	.642**
	Sig. (2-tailed)									0.136	0.592	0.592	0.510	0.215	0.391	0.592	0.706	0.706	0.592	0.000
9	Pearson Correlation										-0.042	-0.042	-0.051	-0.096	-0.067	-0.042	-0.029	-0.029	-0.042	-.201*
	Sig. (2-tailed)										0.631	0.631	0.555	0.267	0.442	0.631	0.735	0.735	0.631	0.019
10	Pearson Correlation											-0.015	-0.018	-0.035	-0.024	-0.015	-0.011	-0.011	-0.015	.207*
	Sig. (2-tailed)											0.863	0.831	0.690	0.782	0.863	0.903	0.903	0.863	0.016
11	Pearson Correlation												-0.018	-0.035	-0.024	-0.015	-0.011	-0.011	-0.015	-0.073
	Sig. (2-tailed)												0.831	0.690	0.782	0.863	0.903	0.903	0.863	0.403
12	Pearson Correlation													-0.043	-0.030	-0.018	-0.013	-0.013	-0.018	.255**
	Sig. (2-tailed)													0.623	0.734	0.831	0.881	0.881	0.831	0.003
13	Pearson Correlation														-0.055	-0.035	-0.024	-0.024	-0.035	-0.167
	Sig. (2-tailed)														0.523	0.690	0.778	0.778	0.690	0.052
14	Pearson Correlation															-0.024	-0.017	-0.017	-0.024	-0.027
	Sig. (2-tailed)															0.782	0.845	0.845	0.782	0.760
15	Pearson Correlation																-0.011	-0.011	-0.015	.207*
	Sig. (2-tailed)																			
16	Pearson Correlation																	-0.007	-0.011	-0.051
	Sig. (2-tailed)																	0.932	0.903	0.556
17	Pearson Correlation																		-0.011	-0.051
	Sig. (2-tailed)																		0.903	0.556
18	Pearson Correlation																			-0.073
	Sig. (2-tailed)																			0.403

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8.

Summary of Linear Regression Analysis for MoCA Score and Psychotic Disorders

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
2	.243[a]	0.059	0.030	5.404	0.059	2.044	4	130	0.092

**p<.01*

Table 9.

Summary of Linear Regression Analysis for MoCA Score and Co-Occurring Diagnoses

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
3	.222[a]	0.049	0.012	5.454	0.049	1.334	5	129	0.254

**p<.01*

Table 10.

Pearson's Correlation Values for Readmission Rate and Demographic Variables

		Total Readmissions	Age	Education	Male	Female	Insured	Uninsured	Undomiciled	Has Housing	Lives Alone	Lives with Others	Single	Partner	Married	Divorced	Widowed	Separated	Caucasian	African American	Hispanic	Asian	Has Family Support	Not Have Family Support
1	Pearson Correlation		-.284**	0.056	0.163	-0.163	-0.141	0.141	0.159	-0.159	.184*	-.184*	-0.008	.193*	-0.029	0.081	-0.130	-0.017	0.049	-0.012	-0.016	-0.081	-.179*	.179*
	Sig. (2-tailed)		0.001	0.520	0.058	0.058	0.104	0.104	0.066	0.066	0.033	0.033	0.926	0.025	0.736	0.351	0.134	0.848	0.574	0.893	0.855	0.350	0.038	0.038
2	Pearson Correlation			-0.104	-0.049	0.049	.273**	-.273**	-.290**	.290**	-0.077	0.077	-.214*	0.104	0.022	-0.092	.261**	-0.013	0.133	-0.082	-0.108	-0.014	.209*	-.209*
	Sig. (2-tailed)			0.230	0.576	0.576	0.001	0.001	0.001	0.001	0.377	0.377	0.013	0.228	0.799	0.290	0.002	0.885	0.123	0.344	0.211	0.873	0.015	0.015
3	Pearson Correlation				0.145	-0.145	-0.061	0.061	-0.128	0.128	-0.057	0.057	0.032	0.136	0.090	-0.130	0.032	-0.130	.209*	-.240**	-0.107	0.129	0.078	-0.078
	Sig. (2-tailed)				0.094	0.094	0.482	0.482	0.138	0.138	0.509	0.509	0.709	0.116	0.300	0.134	0.709	0.134	0.015	0.005	0.216	0.136	0.368	0.368
4	Pearson Correlation					-1.000**	-0.149	0.149	0.109	-0.109	0.127	-0.127	.182*	0.001	-0.117	0.052	-0.139	0.001	-0.004	0.003	0.035	-0.049	-.174*	.174*
	Sig. (2-tailed)					0.000	0.086	0.086	0.210	0.210	0.143	0.143	0.034	0.988	0.176	0.546	0.109	0.988	0.967	0.975	0.686	0.571	0.043	0.043
5	Pearson Correlation						0.149	-0.149	-0.109	0.109	-0.127	0.127	-.182*	-0.001	0.117	-0.052	0.139	-0.001	0.004	-0.003	-0.035	0.049	.174*	-.174*
	Sig. (2-tailed)						0.086	0.086	0.210	0.210	0.143	0.143	0.034	0.988	0.176	0.546	0.109	0.988	0.967	0.975	0.686	0.571	0.043	0.043
6	Pearson Correlation							-1.000**	-.339**	.339**	-.189*	.189*	-0.142	0.047	0.116	0.001	0.073	-0.128	0.019	0.007	-0.071	0.041	0.163	-0.163
	Sig. (2-tailed)							0.000	0.000	0.000	0.029	0.029	0.102	0.589	0.183	0.987	0.405	0.140	0.826	0.937	0.415	0.641	0.059	0.059
7	Pearson Correlation								.339**	-.339**	.189*	-.189*	0.142	-0.047	-0.116	-0.001	-0.073	0.128	-0.019	-0.007	0.071	-0.041	-0.163	0.163
	Sig. (2-tailed)								0.000	0.000	0.029	0.029	0.102	0.589	0.183	0.987	0.405	0.140	0.826	0.937	0.415	0.641	0.059	0.059
8	Pearson Correlation									-1.000**	.452**	-.452**	0.163	-0.097	-.199*	0.086	-0.005	-0.097	-0.037	0.011	0.105	-0.084	-.399**	.399**
	Sig. (2-tailed)									0.000	0.000	0.000	0.059	0.261	0.021	0.320	0.957	0.261	0.670	0.898	0.224	0.333	0.000	0.000
9	Pearson Correlation										-.452**	.452**	-0.163	0.097	.199*	-0.086	0.005	0.097	0.037	-0.011	-0.105	0.084	.399**	-.399**
	Sig. (2-tailed)										0.000	0.000	0.059	0.261	0.021	0.320	0.957	0.261	0.670	0.898	0.224	0.333	0.000	0.000
10	Pearson Correlation											-1.000**	0.071	-0.012	-.351**	.220*	0.000	-0.012	0.146	-0.070	-0.049	-0.161	-.478**	.478**
	Sig. (2-tailed)											0.000	0.410	0.893	0.000	0.010	1.000	0.893	0.092	0.417	0.572	0.062	0.000	0.000
11	Pearson Correlation												-0.071	0.012	.351**	-.220*	0.000	0.012	-0.146	0.070	0.049	0.161	.478**	-.478**
	Sig. (2-tailed)												0.410	0.893	0.000	0.010	1.000	0.893	0.092	0.417	0.572	0.062	0.000	0.000
12	Pearson Correlation													-0.093	-.236**	-.378**	-.286**	-0.093	-0.055	0.135	-0.045	-0.081	-.305**	.305**
	Sig. (2-tailed)													0.281	0.006	0.000	0.001	0.281	0.525	0.119	0.607	0.353	0.000	0.000
13	Pearson Correlation														-0.077	-0.124	-0.093	-0.031	0.085	-0.064	-0.041	-0.026	0.119	-0.119
	Sig. (2-tailed)														0.374	0.153	0.281	0.725	0.325	0.460	0.638	0.762	0.170	0.170
14	Pearson Correlation															-.312**	-.236**	-0.077	-0.039	-0.100	0.168	0.070	.483**	-.483**
	Sig. (2-tailed)															0.000	0.006	0.374	0.655	0.250	0.051	0.423	0.000	0.000
15	Pearson Correlation																-.378**	-0.124	-0.013	0.081	-0.094	0.000	-0.117	0.117
	Sig. (2-tailed)																0.000	0.153	0.878	0.350	0.276	1.000	0.177	0.177
16	Pearson Correlation																	-0.093	0.080	-0.086	-0.045	0.040	-0.052	0.052
	Sig. (2-tailed)																	0.281	0.354	0.323	0.607	0.643	0.547	0.547
17	Pearson Correlation																		-0.025	-0.064	0.156	-0.026	0.030	-0.030
	Sig. (2-tailed)																		0.770	0.460	0.071	0.762	0.728	0.728

18	Pearson Correlation																			-.751**	-.479**	-.309**	0.106	-0.106
	Sig. (2-tailed)																			0.000	0.000	0.000	0.220	0.220
19	Pearson Correlation																				-0.086	-0.055	-.216*	.216*
	Sig. (2-tailed)																				0.323	0.524	0.012	0.012
20	Pearson Correlation																					-0.035	0.007	-0.007
	Sig. (2-tailed)																					0.685	0.940	0.940
21	Pearson Correlation																						.179*	-.179*
	Sig. (2-tailed)																						0.038	0.038
22	Pearson Correlation																							-1.000**
	Sig. (2-tailed)																							0.000
Pearson Correlation									.399**	-.399**	.478**	-.478**	.305**	-0.119	-.483**	0.117	0.052	-0.030	-0.106	.216*	-0.007	-.179*	-1.000**	1	
Sig. (2-tailed)	0.038	0.015	0.368	0.043	0.043	0.059	0.059	0.000	0.000	0.000	0.000	0.000	0.170	0.000	0.177	0.547	0.728	0.220	0.012	0.940	0.038	0.000		
N	135	135	135	135	135	134	134	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 11.

Summary of Linear Regression Analysis for Patient Demographics and Readmission Rate

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	.452[a]	0.205	0.103	3.765

**p<.01*

Table 12.

Pearson's Correlation Values for Community Resource Usage and Patient Demographics

		Age	Education	Male	Female	Insured	Uninsured	Undomiciled	Has Housing	Lives Alone	Lives with Others	Single	Partner	Married	Divorced	Widowed	Separated	Caucasian	African American	Hispanic	Asian	Has Family Support	Do not have Family Support	Community Resource Usage Score
1	Pearson Correl		-0.104	-0.049	0.049	.273**	-.273**	-.290**	.290**	-0.077	0.077	-.214*	0.104	0.022	-0.092	.261**	-0.013	0.133	-0.082	-0.108	-0.014	.209*	-.209*	.183*
	Sig. (2-tailed)			0.576	0.576	0.001	0.001	0.001	0.001	0.377	0.377	0.013	0.228	0.799	0.290	0.002	0.885	0.123	0.344	0.211	0.873	0.015	0.015	0.033
2	Pearson Correl			0.145	-0.145	-0.061	0.061	-0.128	0.128	-0.057	0.057	0.032	0.136	0.090	-0.130	0.032	-0.130	.209*	-.240**	-0.107	0.129	0.078	-0.078	0.077
	Sig. (2-tailed)			0.094	0.094	0.482	0.482	0.138	0.138	0.509	0.509	0.709	0.116	0.300	0.134	0.709	0.134	0.015	0.005	0.216	0.136	0.368	0.368	0.377
3	Pearson Correl				-1.000**	-0.149	0.149	0.109	-0.109	0.127	-0.127	.182*	0.001	-0.117	0.052	-0.139	0.001	-0.004	0.003	0.035	-0.049	-.174*	.174*	-0.057
	Sig. (2-tailed)				0.000	0.086	0.086	0.210	0.210	0.143	0.143	0.034	0.988	0.176	0.546	0.109	0.988	0.967	0.975	0.686	0.571	0.043	0.043	0.514
4	Pearson Correl					0.149	-0.149	-0.109	0.109	-0.127	0.127	-.182*	-0.001	0.117	-0.052	0.139	-0.001	0.004	-0.003	-0.035	0.049	.174*	-.174*	0.057
	Sig. (2-tailed)					0.086	0.086	0.210	0.210	0.143	0.143	0.034	0.988	0.176	0.546	0.109	0.988	0.967	0.975	0.686	0.571	0.043	0.043	0.514
5	Pearson Correl						-1.000**	-.339**	.339**	-.189*	.189*	-0.142	0.047	0.116	0.001	0.073	-0.128	0.019	0.007	-0.071	0.041	0.163	-0.163	0.069
	Sig. (2-tailed)						0.000	0.000	0.000	0.029	0.029	0.102	0.589	0.183	0.987	0.405	0.140	0.826	0.937	0.415	0.641	0.059	0.059	0.430
6	Pearson Correl							.339**	-.339**	.189*	-.189*	0.142	-0.047	-0.116	-0.001	-0.073	0.128	-0.019	-0.007	0.071	-0.041	-0.163	0.163	-0.069
	Sig. (2-tailed)							0.000	0.000	0.029	0.029	0.102	0.589	0.183	0.987	0.405	0.140	0.826	0.937	0.415	0.641	0.059	0.059	0.430
7	Pearson Correl								-1.000**	.452**	-.452**	0.163	-0.097	-.199*	0.086	-0.005	-0.097	-0.037	0.011	0.105	-0.084	-.399**	.399**	-0.130
	Sig. (2-tailed)								0.000	0.000	0.000	0.059	0.261	0.021	0.320	0.957	0.261	0.670	0.898	0.224	0.333	0.000	0.000	0.133
8	Pearson Correl									-.452**	.452**	-0.163	0.097	.199*	-0.086	0.005	0.097	0.037	-0.011	-0.105	0.084	.399**	-.399**	0.130
	Sig. (2-tailed)									0.000	0.000	0.059	0.261	0.021	0.320	0.957	0.261	0.670	0.898	0.224	0.333	0.000	0.000	0.133
9	Pearson Correl										-1.000**	0.071	-0.012	-.351**	.220*	0.000	-0.012	0.146	-0.070	-0.049	-0.161	-.478**	.478**	-0.017
	Sig. (2-tailed)										0.000	0.410	0.893	0.000	0.010	1.000	0.893	0.092	0.417	0.572	0.062	0.000	0.000	0.847
10	Pearson Correl											-0.071	0.012	.351**	-.220*	0.000	0.012	-0.146	0.070	0.049	0.161	.478**	-.478**	0.017
	Sig. (2-tailed)											0.410	0.893	0.000	0.010	1.000	0.893	0.092	0.417	0.572	0.062	0.000	0.000	0.847
11	Pearson Correl												-0.093	-.236**	-.378**	-.286**	-0.093	-0.055	0.135	-0.045	-0.081	-.305**	.305**	0.062
	Sig. (2-tailed)												0.281	0.006	0.000	0.001	0.281	0.525	0.119	0.607	0.353	0.000	0.000	0.475
12	Pearson Correl													-0.077	-0.124	-0.093	-0.031	0.085	-0.064	-0.041	-0.026	0.119	-0.119	0.153
	Sig. (2-tailed)													0.374	0.153	0.281	0.725	0.325	0.460	0.638	0.762	0.170	0.170	0.076
13	Pearson Correl														-.312**	-.236**	-0.077	-0.039	-0.100	0.168	0.070	.483**	-.483**	-.190*
	Sig. (2-tailed)														0.000	0.006	0.374	0.655	0.250	0.051	0.423	0.000	0.000	0.028
14	Pearson Correl															-.378**	-0.124	-0.013	0.081	-0.094	0.000	-0.117	0.117	0.142
	Sig. (2-tailed)															0.000	0.153	0.878	0.350	0.276	1.000	0.177	0.177	0.101
15	Pearson Correl																-0.093	0.080	-0.086	-0.045	0.040	-0.052	0.052	-0.059
	Sig. (2-tailed)																0.281	0.354	0.323	0.607	0.643	0.547	0.547	0.500
16	Pearson Correl																	-0.025	-0.064	0.156	-0.026	0.030	-0.030	-0.142
	Sig. (2-tailed)																	0.770	0.460	0.071	0.762	0.728	0.728	0.100
17	Pearson Correl																		-.751**	-.479**	-.309**	0.106	-0.106	0.064
	Sig. (2-tailed)																		0.000	0.000	0.000	0.220	0.220	0.460
18	Pearson Correl																			-0.086	-0.055	-.216*	.216*	0.011
	Sig. (2-tailed)																			0.323	0.524	0.012	0.012	0.895
19	Pearson Correl																				-0.035	0.007	-0.007	-0.134
	Sig. (2-tailed)																				0.685	0.940	0.940	0.121
20	Pearson Correl																					.179*	-.179*	0.005
	Sig. (2-tailed)																					0.038	0.038	0.957
21	Pearson Correl																						-1.000**	0.001
	Sig. (2-tailed)																						0.000	0.991
22	Pearson Correl																							-0.001
	Sig. (2-tailed)																							0.991

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 13.

Summary of Linear Regression Analysis for Patient Demographics and Community Resource Usage

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.452[a]	0.205	0.103	3.765	0.205	2.023	15	118	0.019

**p<.01*

Appendix

BREVARD COUNTY

COMMUNITY RESOURCE LIST

Circles of Care, Inc.
Sheridan Oaks Inpatient Units: Main Number: 321-722-5200

Sheridan Intake Services (24hr emergency inpatient assessments): 321-722-5222

Twin Rivers Treatment Center **Detox Access Line: 321-890-2639**
CCSU (Children's Crisis Stabilization Unit)
Sheridan Oaks East and West Inpatient Psychiatric Unit

400 East Sheridan Road
Melbourne, FL 32901

Website: https://www.circlesofcare.org

Harbor Pines Crisis Stabilization Unit: Main Number: 321-914-0650

Intake Services (24hr emergency inpatient assessments): 321-914-0640

880 Airport Blvd.
Melbourne, FL 32901

Website: https://www.circlesofcare.org

Circles of Care Outpatient Clinics:

Circles of Care Access Dept (For new patient appointments): 321-890-1550
2020 Commerce Dr. 321-952-6000
Melbourne, FL

2000 Commerce Dr. 321-914-4930
Melbourne, FL

1770 Cedar St. 321-890-1500
Rockledge, FL

6700 S. Washington Ave. 321-269-4590
Titusville, FL

OUTPATIENT THERAPY

Community Psychological Services

Located in: Florida Institute of Technology

Address: 150 W University Blvd, Melbourne, FL 32901

Phone: (321) 674-8106

Website: https://www.fit.edu/community-psychological-services

Brevard Health Alliance

Address: 775 Malabar Rd #105, Malabar, FL 32950

Phone: (321) 241-6800

Website: https://brevardhealth.org

Brevard Health Alliance

Address: 17 Silver Palm Ave, Melbourne, FL 32901

Phone: (321) 241-6800

Website: https://brevardhealth.org

Brevard Health Alliance

Address: 2120 Sarno Rd, Melbourne, FL 32935

Phone: (321) 241-6800

Website: https://brevardhealth.org

Brevard Health Alliance

Address: 220 Barton Blvd, Rockledge, FL 32955

Phone: (321) 241-6800

Website: https://brevardhealth.org

LICENSED INPATIENT SUBSTANCE ABUSE TREATMENT PROVIDERS:

Sally's House 321-676-1260
www.circlesofcare.org
Palm Bay, FL
Transitional living program
Women with young children (with or without custody)

Community Treatment Center, Inc. 321-632-5958
www.ctcbrevard.com
1215 Lake Dr., Cocoa, FL 32922
Residential treatment: open interviews every Tuesday from 2-4 p.m. in Cocoa
Cocoa & Titusville locations
$125 deposit/ $125 per week

S.T.E.P.S. 407-884-2125
Specialized Treatment, Education, and Prevention Services
www.flsteps.org
Women's Residential
1991 Apopka Blvd.
Apopka, FL 32703

Aspire Health Partners 407-245-0045
www.aspirehealthpartners.com
Pregnant females will be accepted for detox (Orlando) ***407-245-0012**
All levels of care: Residential, *Detox, Outpatient, IOP,
Accepts Florida Medicaid/ Sliding scale fee for self pay
Cocoa: 321-637-1866 or Palm Bay: 321-726-2889

Tropical Wellness Center 855-634-8787
www.tropicalnow.com
4700 Dixie Hwy., Palm Bay, FL 32905
Sober Living, PHP, IOP, Adult Males and Females, 160 Beds
Most insurance accepted/ or affordable self pay options available

Tri-County Human Services, Inc. 863-709-9392
www.tchsonline.org
Florida Center for Addictions & Co-Occurring Disorders 863-452-3858
100 West College Dr., **Avon Park**, FL
Application packet requires assessments from psychiatrist and social worker/counselor
Admission process takes approximately 4-6 weeks
Sliding scale/ insurance accepted

Counseling and Recovery Center, Inc. 772-467-3057
www.crcenter.org
1025 Orange Ave., Fort Pierce, FL
Women and women with children (under age 5 can live at center)
Priority given to IV users and pregnant women

Darryl Strawberry Drug and Alcohol Recovery Center 855-973-7333
www.strawberrycenter.com
81 Beehive Circle Dr., St. Cloud, FL
2775 Big John Dr., Deland, FL
Insurance required

Port St. Lucie Hospital /Dual Diagnosis 772-335-0400
www.portstluciehospitalinc.com
Medicare, HMO, PPO accepted
Port Saint Lucie, FL

Windmoor Healthcare/Dual Diagnosis 727-541-2646
www.windmoor.com
11300 US 19 North, Clearwater, FL
Medicare accepted

House of Freedom, Inc. 407-957-9077
www.houseoffreedom.com
2311 N. Orange Blossom Trail, Kissimmee, FL
Men Only/ Bi-Lingual (English/Spanish)
Insurance accepted*
*Financial assistance available: call to see if you qualify for a grant888-796-8040

Ambrosia Treatment Center 772-323-2099
www.ambrosiatc.com
1091 Bayshore Blvd
Port St. Lucie, FL
Insurance required

Lakeview Health 866-314-5960
www.lakeviewhealth.com
1900 Corporate Square Blvd.
Jacksonville, FL 32216
4-6 Week, Dual Diagnosis, Male and Female programs
Accepts most insurance, will provide transportation if needed

OUTPATIENT SUBSTANCE ABUSE SERVICES

Circles of Care, Inc.
Access Department/ Outpatient 321-890-1550
Website: https://brevardhealth.org

Women's Center - Outpatient Counseling
Domestic Violence 24 Hr. Hotline ***321-607-6809***
Counseling services available for **men and women**:
Website: https://www.womenscenter.net
1425 Aurora Rd., Melbourne 321-242-3110
400 Julia St., Titusville 321-607-6811
Monday – Friday 9:00am – 4:00pm/ Sliding scale fee basis

Florida Tech/Scott Center *(Florida Institute of Technology)* 321-674-8050
150 W. University Blvd. Bldg. 264, Melbourne 32901
Psychological services/ counseling

Website: https://www.fit.edu/community-psychological-services

S.T.E.P.S.-***(Specialized Treatment, Education, and Prevention Services***)321-637-7730
803 N. Fiske Blvd., Cocoa, FL 32922
Melbourne 321-775-1517
1751 Sarno Rd.
Titusville 321-607-5082
2400 S. Hopkins Ave., Suite J

Website: https://www.flsteps.org

ASPIRE 407-245-0045
3905 Grissom Pkwy.
Cocoa, FL 32926 321-637-1866
4670 Lipscomb St. NE
Palm Bay, FL 321-726-2889
Website: https://aspirehealthpartners.com/programs-and-services/program-details/43/Brevard-Outpatient-Center

Family Counseling Center
505 Brevard Ave., Ste. 106, Cocoa 321-632-5792
4880 Stack Blvd., Ste. E5, Melbourne 321-984-9000
Accepts Medicaid, private insurance, sliding scale
Website: https://www.lccbrevard.org

Community Treatment Center 321-632-5958
Palm Bay, Cocoa, and Titusville locations, IOP and Level I outpatient
Website: http://www.spacecoastrecovery.com/NewSite

Western Judicial
1600 Sarno Rd., Ste. 110, Melbourne 321-752-7557
310 Brunson Blvd., Ste. 102, Cocoa 321-631-6976
Website: http://www.westernjudicial.com/index.htm

OPIOD OVERDOSE PREVENTION PROGRAM

Find and Obtain Narcan in Brevard County Free of Charge
Website: https://www.isavefl.com/find-naloxone.shtml

Circles of Care- Main Center
Address: 400 E. Sheridan Road, Melbourne
Phone: (321) 676-6650 EXT. 4715
Contact: Stephen Lindner
Email: slindner@circlesofcare.org

CFSATC Inc, Central Florida Treatment Centers- Cocoa

Address: 7 North Cocoa Blvd, Cocoa
Phone: 321-631-4578
Website: https://www.cfltreatmentcenters.org

CFSATC Inc, Central Florida Treatment Centers- Palm Bay

Address: 2198 Harris Ave NE, Palm Bay
Phone: 321-951-9750
Website: https://www.cfltreatmentcenters.org

The RASE Project
Address:1600 Sarno Rd., Ste 115, Melbourne
Phone: 321-305-4397
Email: jaime.m@raseproject.org
Website: https://raseproject.org

Brevard CARES
Address: 4085 US-1, Rockledge
Phone: (321) 632-2737
Email: Heather.Gibb@brevardcares.org
Email: Rebecca.Melick@brevardcares.org
Website: https://brevardcares.org

SHELTERS

C.I.T.A. Mission 321-327-8904
Men's homeless shelter
Doors open at 4:00pm
Website: https://www.citarescuemission.org

Salvation Army 321-631-2764
Women's domestic violence shelter
Confidential location

Serene Harbor 321-726-8282
Women's domestic violence shelter
Palm Bay, FL

Sue Pridmore Center / Salvation Army 321-872-2225
Homeless shelter/ Case Mgmt/ Self Improvement
Women with or without young children
NOT a domestic violence shelter / NOT for addiction rehabilitation

HOUSING ASSISSTANCE

Steady Town 321-345-7947
Assistance in finding safe housing for homeless/ indigent
Located at Daily Bread Outreach Center
815 East Fee Ave., Melbourne, FL
Call ahead to schedule an assessment
****** Walk –In appointments available: Monday – Friday, 8:00 am --1:00pm******

FINANCIAL ASSISTANCE

North Brevard Charities

Website: **https://www.northbrevardcharities.org/**

Email: jerwin@northbrevardcharities.org

Office: (321) 269-6555

Thrift Shop: (321) 269-3272

Address: 4475 South Hopkins Ave. Titusville, FL 32780

Brevard Community Action Agency

- Emergency Services
  - Mortgage/Rental Assistance
  - Medical/Dental Payment Assistance

    - Prescription Assistance
    - Information and Referral
- Cremation/Burial Assistance
- Low Income Home Energy Assistance Program
- Self-Sufficiency Program

Website: http://www.brevardfl.gov/HousingAndHumanServices/CommunityActionAgency

Phone: 1-800-955-8771
Address: 2725 Judge Fran Jamieson Way Viera, FL 32940

FOOD AND CLOTHING ASSISSTANCE

Daily Bread Inc. 321-723-1060
815 East Fee Ave., Melbourne, FL
Serving balanced hot meal from 11:00am- 2:00pm daily
365 Days / Year
Other services available including showers, clean clothing, bicycles, assistance with food stamp cards, cell phones, and ID cards

Sharing Center of Central Brevard 321-631-0306
113 Aurora St., Cocoa, FL
Community Kitchen: serving a balanced hot meal daily
Mon-Fri from 11:00a.m. – 1:00 p.m.
Sunday bagged lunch from 2:00 p.m. – 3:00 p.m.
Other services: food pantry, clothing, and basic household items
Cold Night Shelter (Lower than 45 degrees)

MEDICAL AND DENTAL CARE

Brevard Health Alliance
www.bhachc.org
Medical Locations:

Melbourne	321-733-2021
Palm Bay	321-722-5959
Rockledge	321-639-5177
Titusville	321-268-0267

Dental Locations:

Melbourne	321-241-6800
Rockledge	321-433-8350

Mobile Clinic:

North Brevard	321-914-5863
South Brevard	321-914-5033

SERVICES FOR THE AGING AND MEMORY TESTING

Dememtia and Alzheimer's Testing:

Memory Disorder Clinic

Address: 3661 S. Babcock St. second floor, Melbourne

Phone: 321.434.7612

Website: https://hf.org/healthcare-home/departments-services/senior-wellness/memory-disorder-clinic

Center for Family Caregivers

Address: 3661 S. Babcock St., Melbourne

Phone: 321.434.7625

Website: https://hf.org/healthcare-home/departments-services/senior-wellness/center-family-caregivers#find-hope-in-your-community-

Brevard Alzheimer's Foundation

Address: 4676 N. Wickham Rd., Melbourne

Phone: 321.253.4430

Website: https://brevardalz.org

Osceola Council on Aging

Address: 700 Generation Point, Kissimmee

Phone: 407.846.8532

Website: https://osceolagenerations.org

Alzheimer's Association, North & Central Florida Chapter

Phone: Helpline: 1.800.272.3900

Website: https://www.alz.org/cnfl

Alzheimer & Parkinson Association of IRC Center for Memory & Motion

Address: 2300 5th Avenue, Suite 150 Vero Beach, FL 32960

Phone: 772.563.0505

Website: https://alzpark.org

Florida Department of Elder Affairs

Phone: 1-800-963-5337

Website: https://elderaffairs.org

Senior Resource Alliance

Address: 3319 Maguire Blvd #100, Orlando, FL 32803

Phone: (407) 514-1800

Website: https://www.seniorresourcealliance.org/

Aging Matters in Brevard

Address: 3600 W King St, Cocoa, FL 32926

Phone: (321) 639-8770

Website: https://agingmattersbrevard.org

AUTISM SPECTRUM DISORDER SERVICES

The Scott Center for Autism Treatment

Address: 3251 Engineering St, Melbourne, FL 32901

Phone: (321) 674-8106

Website: https://www.thescottcenter.org

Florida Autism Center

Address: 1535 W NASA Blvd Unit C-1, Melbourne, FL 32901

Phone: (321) 235-6199

Website: https://www.bluesprigautism.com/florida-autism-center-melbourne/?utm_source=google&utm_medium=local&utm_campaign=flac_melbourne

Eastern Florida Autism Center

Address: 1320 Culver Dr NE, Palm Bay, FL 32907

Phone: (321) 610-3849

Website: https://www.efac15.com

The Sonder Autism Center

Address: 475 S John Rodes Blvd, Melbourne, FL 32904

Phone: (321) 241-1170

Website: https://www.thesonderacademies.com

Positive Steps ABA

Address: 1912 Dairy Rd, West Melbourne, FL 32904

Phone: (321) 413-3366

Website: https://positivestepsaba.com

Puzzle Box Academy

Address: 2180 Julian Ave NE, Palm Bay, FL 32905

Departments: Kaleidoscope Interventions

Phone: (321) 345-0861

Website: https://www.puzzleboxacademy.com

VETERANS

Veterans Crisis Line: 1-800-273-8255

Press 1

VA- Veterans Administration 321-637-3788
2900 Veterans Way, Viera, FL 32940

Volunteers of America (VOA) 321-252-4367
Transitional housing for homeless veterans, Cocoa

Transitional Housing 321-409-8167
Veterans only, Melbourne

Win- Vet 321-264-1887
Housing for homeless veterans, Titusville

The Transition House, Inc. 407-892-5700
3800 5th St., St. Cloud, FL
GPD Veterans program
90 Day shelter for veterans

FREE HIV TESTING

Aspire Health Partners 407-245-0010
www.aspirehealthpartners.com EXT. 294
CENTAUR: HIV rapid test
(Preliminary results in 20 minutes) 407-245-0014
EXT. 237

Project Response 321-724-1177
HIV testing and prevention
Support groups and case management for individuals who are HIV +
745 S. Apollo Blvd., Melbourne, FL

Comprehensive Health Care Clinic 321-253-0120
HIV and other STD testing and counseling
1495 N. Harbor City Blvd.
Melbourne, FL

TRANSPORTATION

SCAT (Space Coast Area Transit) 321-633-1878
www.ridescat.com
Brevard County local transportation

Greyhound 321-723-4323
www.greyhound.com
1 Air Terminal Pkwy.
Melbourne, FL

SUPPORT GROUPS

Alcoholics Anonymous 321-724-2247
www.aaspacecoast.org

Narcotics Anonymous 321-631-4357
www.spacecoastna.org

Al-Anon 321-639-0220
Nar-Anon 321-676-9811

Caregiver Support Group: Alzheimer's 321-434-7612