ADDRESSING MILD TO MODERATE MEMORY IMPAIRMENT AMONG YOUNG ADULTS (18-44 YEARS OLD) WITH ALCOHOL USE DISORDER AND DEPENDENCE THROUGH RESTORATIVE REHABILITATION COMBINED WITH COMPREHENSIVE, EVIDENCE-BASED MEDICAL DETOXIFICATION TREATMENT: INTEGRATIVE REVIEW

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of the requirements for the degree

Of Doctor of Nursing Practice

By

Motunrayo Atinuke, Ayodeji

Liberty University

Lynchburg, VA

April 2022

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Scholarly Project Chair Approval:

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ABSTRACT

Neurocognitive impairment especially mild to moderate stage of cognitive impairment (MCI) has been observed to be prevalent among young adults (18-44 years old) seeking treatment for alcohol use disorders (AUDs). Neurocognitive testing reveals memory impairment in key components of cognition such as attention, memory, language, reaction time and perception in varying degrees and severity among those with AUDs. Research has verified that alcohol can actually predispose individuals to what is known as alcohol related brain damage (ARBD) or alcohol related cognitive impairment (ARCI) as related to cognitive (memory) impairment. This state of brain damage often impedes treatment outcome due to poor insight to cognitive deficits, treatment non-adherence and the slower nature of its course of onset, which predisposes clients to higher rates of relapse. The primary objective of this integrative review was to identify the most effective way to improve mild to moderate memory impairment encountered among the young adult population (18-44 years old) with AUD that desired treatment. Currently with the new generation of research that aims at facilitating treatment process as well as improves treatment outcomes, this study draws strength from reviewing past literature on the applicability of implementing restorative rehabilitation in combination with comprehensive, evidence-based medical detoxification as a form of treatment for this group of people. The study equally examines the effect of the combined therapy as it translates into holistic evidence-based practice.

Keywords: Alcohol use disorder (AUD), Young adults (18-44 years old), memory impairment, Cognitive performance, Alcohol related cognitive impairment (ARCI), Restorative rehabilitation, Comprehensive evidence-based medical detoxification.

ACKNOWLEDGMENTS

Above all else, may I take this special moment to thank my heavenly Father for His sustaining power, grace, and immeasurable love to me; for ordering and directing my educational path as part of His plan of healing my memory. I have a story to tell! With deepest gratitude I express my profound appreciation and love for God who has made life meaningful and worth living. Thank You Sir!

I would like to specially thank the Liberty University School of nursing faculty for being supportive and accepting, the research Committee for their dutiful direction and guidance during this project. I would like to express my profound gratitude to my project chair, Dr. Sade Odedina for her relentless support spiritually, academically, and morally; the dedication she channeled into seeing to the successful development and production of this research work. Also, my sincere gratitude goes to the dean of the school of Nursing, Dr. Akers as well as to Dr. Kopis (DNP program chair).

My postgraduate academic journey and the story of my thesis completion would not have been accomplished without the unfailing love and support of my husband, Sunday Ayodeji, Ayodeji and my son, Adeoluwa-Daniel Ayodeji, thank you both for your unwavering encouragement throughout the journey. I love and appreciate both of you dearly and I give you a standing ovation! My most sincere acknowledgment goes to my church family (RCCG-TRP) and most importantly to the pastorate (pastors Bukky and Fola especially) for kingdom love and support.

Finally, I salute all nurses pursuing higher degree of education to make nursing profession a flourishing platform of medical, and scientific excellence that would better promote nursing professional to better serve patients through the utilization of the acquired wealth of knowledge.

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List of Abbreviation

National Institute on Alcohol Abuse and Alcoholism (NIAAA)

Substance Abuse and Mental Health Services Administration (SAMHSA)

Center for Disease Control and Prevention (CDC)

World Health Organization (WHO)

Cumulative Index to Nursing & Allied Health Literature (CINAHL)

Collaborative Institutional Training (CITI) Program

Institutional Review Board (IRB)

Doctor of Nursing Practice (DNP)

Liberty University (LU)

Integrative Review (IR)

Alcohol Use Disorder (AUD)

Mild Cognitive Impairment (MCI)

Alcohol Related Cognitive Impairment (ARCI)

Restorative Rehabilitation Therapy (RRT)

Comprehensive Evidence-Based medical detoxification (CEBMD)

SECTION ONE: FORMULATING THE REVIEW QUESTION

Introduction

Alcohol use disorder (AUD) is a progressive, chronic, and relapsing psychiatric illness portrayed by an individual's preoccupation with alcohol and inability to stop or control use despite adverse social, occupational, or health concerns (NIAAA, 2020). The individual with AUD presents with a strong urge or need to consume alcohol to the point of entering a detrimental state despite its effect on individuals' health or life welfare as a whole. AUD not only affect its victims but family members as well, colleagues and the society at large. World Health Organization (WHO) estimated report in 2018 stated more than 280 million individuals worldwide have AUD, however, the era of Covid-19 pandemic has somehow complicated this problem even more (WHO, 2020; World Economic Forum, 2022). Different terms such as alcohol abuse, alcohol dependence, alcohol addiction, and idiomatically alcoholism had been given to the excessive alcohol consumption (NIAAA, 2020). However, AUD now derives its name in DSM-5 from combining both alcohol abuse and alcohol dependence from DSM-IV disorders into one disorder-AUD by the American Psychiatric Association with sub-categorizations of mild, moderate, and severe states (NIAAA, 2021).

The prevalence of Alcohol misuse (AUD) has become a global burden with a report in 2016 indicating it was the seventh-leading risk factor for premature death and disability among people ages 15 to 49 (NIAAA, 2019). Duffy's (2022) study revealed excessive alcohol consumption among adolescents and young adults may predispose to detrimental long-term neurological implications on their vulnerable brain, which is still maturing both structurally and functionally at this young age of life (Brennan et al., 2020). Although severe alcohol misuse gets the most public attention, studies have affirmed that AUD even at its mild to moderate levels

causes significant damage to its victim's brain, their families, and the community (NIAAA, 2019). Though some studies have postulated that moderate alcohol consumption may yield some health benefits such as reducing the risk of heart disease, ischemic stroke and possibly risk of diabetes, these potential benefits are minor and not applicable to every individual (Mayo Clinic, 2021). Hence based on this assumption, the CDC (2020), proposed the most recent dietary guidelines that no individual should begin the use of alcohol because of potential health benefits, warning every individual to avoid alcohol use completely as the best health measures.

A recent study by Bruijnen et al., (2021) projected that approximately 30–80% of the people seeking treatment for alcohol use disorder (AUD) present with cognitive impairments, which could be in the mild, moderate to severe form. Mild to moderate cognitive (memory) impairment (MCI) is the period between the predictable cognitive decline of normal aging and the irreversible decline of dementia. It is distinguished by memory impairment, difficulty with language, thinking or judgment problems. Studies proposed that about 10% to 15% of individuals with MCI eventually develop dementia each year. (Mayo Clinic, 2022). Exploring the impact of alcohol misuse on cognitive health led the researcher to propose a study on how alcohol misuse (AUD) relates to mild to moderate memory impairment among young adults (ages 18-44).

Though alcohol impacts the whole body negatively, studies have postulated its worse effects are on the brain causing brain disorder (Henderiks et al., 2022). These brain defects signify global degenerate (Bates et al., 2013; Caballeria et al., 2020), and specific loss of neurons in the higher region of the frontal lobe in association with the cortex, hippocampus, limbic system, cerebellum, thalamus and hypothalamus and the networks among them (Caballeria et al., 2020). These structural alterations in the brain generate impairments in attention, memory and

learning, executive functions, and effortless abilities such as visuospatial processing, abstraction or problem solving, and concept formation, etc. (Caballeria et al., 2020). Furthermore, individuals with ARCI struggle with attending to and retaining new information, identify goals or adapt to new environmental demands; present with increased impulsivity that can alter their decision-making ability (Rupp, 2012; Caballeria et al., 2020). All these anomalies predispose patients with ARCI have lower self-efficacy, lower motivation, and treatment non-adherence (Bates et al., 2013, 2006; Bernardin et al., 2014; Caballeria et al., 2020).

One of the concerning outcomes of AUD is the "alcohol-induced blackouts, "known as "memory confabulation" (hippocampus alteration), which are gaps in the memories of the AUD victim, making it impossible for the individual's brain to convert short-term to long-term memories due to temporary blockage by alcohol (NIAAA, 2022). According to Bruijnen et al., (2021) study, this could have led those with mild to moderate memory impairment due to alcohol to have lack of insight into their own cognitive deficits or the possibility of symptoms being obscured by the addiction itself (Walvoort *et al.,* 2016; Bruijnen et al., 2021). This lack of insight could possibly be compounded due to ARCI still being under diagnosed, undertreated and under-recognized (Caballeria et al., 2020). In response to these presenting issues, this scholarly review aims to examine the impact of chronic alcohol use (AUD) on young adults (ages 18-44 years old) brain leading to mild to moderate cognitive impairment. Though there still are not yet gold-standard interventions endorsed for clinical practice/treatment; this study proposed combining restorative rehabilitation therapy (RRT) with comprehensive, evidence-based medical detoxification (CEBMD) treatment rather than using each intervention individually as an aid in restoring memory deficits.

Background

Globally, alcohol use disorders (AUDs) regardless of intake remain the most widespread of all substance use disorders afflicting millions of people worldwide. The global burden of AUD differs significantly from one nation to another. According to World Population Review (2022) most recent data concerning AUD rates per countries, a recorded percentage of both genders ages 15 years and above with alcohol use disorders in 2016 (per WHO) has Hungary with the highest prevalence of alcohol use disorders overall (both genders), with a 21.2% of the total population afflicted. Though per capita the U.S. is 38th on the list of countries with the highest alcohol consumption, taking the 7th position on the list of countries with the highest rates of AUD (World Population Review, 2022). Reported by NIAAA (2021), the global death of the 3 million deaths in 2016 (5.3 percent of all global deaths; 7.7 percent for men and 2.6 percent for women) was attributed to alcohol consumption. Social impact of alcohol made the United States in 2002 to enforce the illegal act of driving at or above 0.08% blood alcohol level for adults ages 21 and over in all 50 States. The law extended to those less than 21 years of age is and forbid them to drink liquor when driving (NIAAA, 2021).

Studies have projected that approximately 30–80% of the people seeking treatment for alcohol use disorder (AUD) present with cognitive impairments (Bruijnen et al., 2021). Alcohol is reportedly a causative factor in over 200 health challenges (WHO, 2018; Caballeria et al., 2020) as well as for premature death (Rehm et al, 2013; Caballeria et al., 2020) The tenacious effects of alcohol on the central nervous system is what leads to the burden of disease encountered especially the structural and functional changes in the brain (Bates et al., 2013; Harper, 2009; Sachdeva et al., 2016; Caballeria et al., 2020). Multiple studies equally attributed varieties of risk factors responsible for alcohol addiction and these risk factors could be both

internal and external factors contributing to the development of AUD, which could later lead to memory impairment. Internal factors include genetics, psychological conditions, personality, personal choice, and drinking history. External factors comprise of family, environment, religion, social and cultural norms, age, education, and job status. Significantly, multiple research have insinuated personal choice of individual's desire whether or not to begin drinking; however, once drinking commences, it is difficult to stop the addictive behavior (Addiction Center, 2022).

According to the U.S Department of health and human services-Healthy People 2030, in the past year, more than 20 million adults and adolescents in the United States have experienced substance use disorder with possible memory impairment. Healthy People 2030's primary goal is to downgrade and prevent alcohol and drug misuses by helping victims follow through the strategic treatment plan designed for their need. The objectives are to decrease the proportion of adults aged 21 years and over involved in liquor binge drinking during the past 30 days. Also, lowering the percentage of mortality rate caused by motor vehicle crash that involves a drunk driver (Office of Disease Prevention and Health Promotion-ODPHP, 2022).

Since numerous studies have refuted the benefits of light to moderate alcohol consumption in relation to better health and protective cognitive performance (Hassing, 2018). Assessing the effect of chronic alcohol use on cognitive impairment require prompt attention to address risk actors as well as progressive research to better understand the relationship between alcohol and the brain; and the promotion of evidence-based treatment interventions to promote cognitive health through effective interventions and preventive measure.

Defining Concepts and Variables

The intention (concepts) of this review is to examine current literature regarding both memory impairment and alcohol use disorder (AUD) interventions for alcohol related cognitive impairment (ARCI). The variable is measured by assessing the impact of AUD on the mild to moderate memory of male and female young adults (18-44 years old) worldwide. The operational definition for ARCI is stigma, abstinence shortfalls, poor insight, lack of awareness, non-adherence to treatment and delayed translation of AUD research into evidence-based practice (EBP) care (Caballeria et al., 2020; Glass et al., 2021), and the infrequent use of identified care in this population.

Rationale For Conducting the Review (Problem Statement)

> **“**The combination of restorative (spiritual, physical, mental/emotional) rehabilitation therapy (RRT) and comprehensive, evidence-based medical detoxification (CEBMD) proposed to improve mild to moderate memory impairment in young adults affected by alcohol use disorder (AUD).”-Problem statement.

According to Bruijnen et al., (2021), it has been asserted that approximately 30–80% of the individuals seeking treatment for alcohol use disorder (AUD) present with cognitive impairments. AUD can progressively destroy the brain nerve cells, slow down the hippocampus, and eventually shrink and damage the brain causing short- and long-term memory loss. In order to promote treatment efficacy of alcohol related cognitive impairment (ARCI), the gaps gathered from various studies such as how poor or lack of insight into AUD victims’ cognitive deficits can

negatively impact treatment (Bruijen et al., 2021) and non-adherence to treatment management as constituents to memory impairment were explored.

Since research has discovered mild cognitive impairment (MCI) can predispose to non-curable dementia, increasingly attention is focused on prevention of MCI. Therefore, this integrative research proposes exploration of treatment plans to better estimate the association between alcohol consumption and risk of MCI as part of the treatment modalities to prevent clinical memory impairment and eventual dementia (Hui et al., 2019). The study's problem statement focuses on the possibility of combining RRT and CEBMD in improving memory impairment in young adults ages 18-44 year old with AUD in view of the challenges abstinence. In the process of management alcohol related cognitive impairment (ARCI), it is important to assess and detect cognitive impairments early, in order to accommodate and manage treatment of AUD effectively.

Though long-standing management modalities have shown cognitive behavioral therapy (CBT) to be an effective treatment, but it has paid minimal attention or completely neglected patients' neuropsychological functioning. Hence, CBT approach could be insufficient for patients suffering from ARCI since it requires preserved cognitive capacities such as episodic and predictable memories and executive functions (Caneva et al., 2020). Based on this discovery and abstinence not being consistent in care management, this study is exploring the use of a more consistent therapy known as restorative rehabilitation therapy (within cognitive rehabilitation or remediation therapy-CRT) in combination with comprehensive evidence-based medical detoxification because the process of CRT covers neuropsychological functioning of memory and executive functions.

Cognitive rehabilitation therapy (CRT) is constructed upon cognitive retraining, which is primarily to supplement and improve cognitive functions in areas of memory, mental speed, attention, planning etc. The therapy has three processed of rehabilitation: (1) Restitution or restoration of the lost compromised function. (2) Substitution training, which focuses on replacement of the lost function and (3) Compensation training, which is used when the first two approaches could not be used (Rajeswaran & Bennett, 2018). CTR as a group of treatment proposed by the Institute of Medicine (IOM) in 2011 is to restore cognitive function after damage has been inflicted on the brain from abuse or injury and alcohol is one of the several causes of acquired brain injury. CRT presents with four steps of education, process training, strategy training and functional activities training (Barman et al., 2016).

The restorative rehabilitation therapy (RRT) aspect of CRT is the focus of this study and it follows the four steps of education, process training, strategy training and functional activities training. It is a continuous process designed to bring about functional changes by regenerating or consolidation previously learned patterns of behavior or creating new patterns of cognitive activity or compensatory mechanisms for impaired neurological systems. For RRT to be effective for the individual with mild to moderate memory impairments, it must be tailored to the individual's need while the individual must be interested and functionally independent with the knowledge that CRT could foretell the level of function throughout the rehabilitation process. The process is to be intensive and complete and geared towards providing safe and efficacious treatment that can help return the patient to pre-morbid state thereby promoting wider employment opportunities. Neuropsychological assessment, which covers tests of attention, mental speed, learning and memory, executive functions as well as visuo-spatial functions, is

initiated first before therapy commences as the foundation of designing the CRT program. (Barman et al., 2016; Rajeswaran & Bennett, 2018).

Since studies have proposed RRT could not be a "stand alone" therapy for those with alcohol related memory impairment, and combination of therapies has always proved more beneficial from the standpoint of multidisciplinary approach; hence this study is combining restorative rehabilitation therapy (RRT) with comprehensive, evidence-based medical detoxification (CEBMD) as the best treatment approach for this study. These combined treatment interventions might warrant inpatient admission into a well-established detoxification center to promote holistic evidence-based care or could be approached from an outpatient standpoint. The primary goal of the restorative approach is to strengthen, reinforced or restore the impaired attention and memory skills and this is achieved through the repetitive exercise of standardized cognitive tests, targeting specific cognitive fields such as selective attention, memory for new information (Barman et al., 2016).

Detoxification is frequently considered the first step of AUD treatment. Alcohol detoxification (detox) is a form of natural process that occurs within the body in a bid to get rid of the damaging effect of extreme long-term alcohol use disorder. It is a period of medical treatment, which is usually implemented in an inpatient/hospital or outpatient (detox center) setting. Alcohol detoxification primarily address the physiological symptoms of AUD with the central goal of effectively and safely promoting individuals' wellness by addressing withdrawal symptoms and other problems after cessation of alcohol use; to prevent relapses and manage pain. Alcohol affects many body systems but primarily the brain, which could make detoxification (clearing) dangerous and painful. The need to managing alcohol detoxification under medical supervision in an inpatient detox center is important because it promotes safety

and comfort for the patient. The extent of supervision depends on the extent of the physical and/or mental withdrawal symptoms (Addiction Center, 2022).

Since alcohol is considered one of the most dangerous substances to detox from as part of addiction treatment, it is imperative to combine it with other treatment since it's usually insufficient on its own for a successful recovery. The need to treat both the physiological and psychological effects of AUD of those seeking addiction treatment is fundamental to correcting the mild to moderate memory impairment unleashed by the damaging use of alcohol. The alcohol detoxification usually takes 2-7 days, and the process involves 3 steps: comprehensive medical intake, medication regimen, and stabilization (Addiction Center, 2022). Hence, this integrative review combined both restorative rehabilitation with medical detoxification accomplished through counseling, support groups, therapies, and an inpatient rehab program to promote standardized recovery mentally and physically.

Purpose for Conducting the Project

The rationale for conducting this project is to assess and address the incidence of mild to moderate memory impairment among young adults (18-44 years old) with alcohol use disorder (AUD) with plans on how to effectively resolve this problem. Primarily, the review thoroughly addressed the impact of alcohol use disorder on the memory, it then focused on treating the damaging effect of mild to moderate memory impairment unleashed by excessive use of alcohol (AUD) on the brain by adopting key treatment interventions that research had endorsed. The study explored the benefits of combining restorative rehabilitation (a form of cognitive rehabilitation therapy) and comprehensive, evidence-based medical detoxification as a proposed treatment plan.

Another purpose of this integrative review is to identify and address gaps in order to best guide the management of cognitive impairment caused by AUD, as well as affirm the benefits of the classified interventions that could lead to ineffective and nonproductive treatment. To propose the combination of restorative rehabilitation therapy (RRT) and neuropsychological detoxification (CEBMD) in addressing mild to moderate memory impairment caused by AUD, with the aim to close the treatment gap. Past studies equally indicated that combining restorative rehabilitation with comprehensive, evidence-based detoxification therapy could promote holistic wellness among those with AUDs thereby prevent further cognitive damage (Caneva et al., 2020).

Purpose and/or Review Question (s)

Unambiguously, this integrative review purpose to answer the research question: *"Does the combination of restorative rehabilitation therapy and comprehensive, evidence-based medical detoxification improve memory impairment in adults (18-44 years old) with alcohol use disorder (AUDs)?"* The reviewer thereby adopted the five stages of an integrative review specified by Whittemore and Knafl (2005) by devising a PICO question to aid in formulating the problem of this study and interventions:

Patient/Problem: Does the combination of restorative rehabilitation therapy and comprehensive, evidence-based medical detoxification improve memory impairment in adults (18-44 years old) with alcohol use disorder (AUDs)?

Intervention: Management through combining restorative rehabilitation and comprehensive evidence-based medical detoxification treatment.

Comparison: Does comprehensive, evidence-based medical detoxification treatment alone compared to combining both CEBMD and RRT aid in improving ARCI

Outcome: Improvement of mild to moderate memory impairment; abstinence from alcohol and improvement of overall quality of life (QOL).

These supplemental questions will further assist in conducting the review:

1) Are there adequate and effective platforms to promote awareness of the danger of AUD?
2) How can impairment in memory and executive functions be bridged?
3) How does lack of insight and non-adherence to treatment complicate memory impairment?
4) 2) Is combining treatment interventions more beneficial than the use of just one intervention?

Essential of Doctoral Education for Advanced Practice Nursing

Essential I

The primary objective of this integrative review is to examine, synthesize, and analysis up-to-date literature to establish the scientific and practical approaches for managing and improving memory impairment among young adults affected by alcohol use disorder, in conjunction with the scientific underpinnings for practice as outlined in DNP Essential I. According to Curtis et al., (2017), translating research evidence into clinical practice is crucial to provision of effective, safe, and transparent healthcare in order to meet the expectations of patients, families and society.

Essential II

Goal is to incorporate the proposed treatment interventions of combining restorative rehabilitation and comprehensive evidence-based medical detoxification to better serve those with alcohol related cognitive impairment (ARCI). The focus of *Essential II* is on the art and science of fostering leadership ability that will promote quality healthcare, how the care is better delivered and the promotion of patient safety, which will ultimately bring about systems level of change (AACN, 2006). This review's goal is to address the gap in the lack of acceleration in translating AUD research into evidence-based practice. Outcome and sustainability of this review promote innovative collaborative efforts among nurse leadership within the PhD and DNP levels to work more closely together to make research findings more practicable in their various organizational systems.

Essential III

Researching multiple literatures for this project fostered the knowledge integration and possibility of applying the acquired knowledge makes it possible to recognize the damaging effect of alcohol misuse on the brain and how future research could help transform the treatment approaches at the clinical level (AACN, 2006). The application of the Melynk Levels of Evidence (Melnyk & Fineout-Overholt, 2015) aided in the review, critique and synthesizing literatures on ARCI and its interventions throughout this study time with the goal to proper disseminate the results of the comprehensive literature review.

Essential IV

This Essential's focus is on proficiency in the utilization information systems and technology with the goal to improve and transform healthcare delivery systems. It demonstrates the reviewer's ability to pilot technology in the use of databases, search engines while searching

for relevant literature to review, appraise, critique, and synthesize in order to deliver a comprehensive, scientific based project (AACN, 2006). The importance of the accuracy of articles searched through technology is an indication of the improvement of the search rigor and the elimination of bias to make room for transformational healthcare delivery (Whittemore & Knafl, 2005).

Essential V

This Essential is the implementation of healthcare policy as a form of advocacy in healthcare. AS the DNP reviewer identifies the health problem of focus, efforts were channeled into spearhead legislation through ongoing negotiation and agreement, advocating for social justice as well as for the nursing profession. This integrative review is serving as a springboard in the involvement in healthcare policies at various levels to bring about transformational changes in order to duly advocate for mental health population (focus on addiction) and improve cognitive deficits (Dreher & Glasgow, 2010; AACN, 2006). This IR is encouraging APRN-DNPs to speak out and be involved in national and international policies as a voice for the patients and the profession of nursing.

Essential VI

According to the IOM (2001), the team-based care is vital to the safety and welfare of all patients. The Essential prepares DNP to assume leadership role in inter-professional association in order to effect change in the exploration of the multidimensional practice and system issues by communicating effectively with other collaborating team members. To meet the IOM mandate of safe, timely, effective, efficient, equitable, and patient-centered care, leaders in healthcare delivery systems must collaborate to improve patients and population health outcomes (AACN,

2006). For this IR outcome clinical providers are encouraged to team up in promoting awareness of the danger of AUD locally, nationally and internationally.

Essential VII

This fundamentals of this Essential is in health promotion and risk reduction as APRN-DNPs evaluate and interpret occupational and environmental information with the goal to improve the health of individuals and communities (AACN, 2006). The outcome of this IR is in the ability of clinical providers to reduce the risk associated with AUD and memory impairment thereby promoting optimal health as they integrate the psychosocial and cultural impact of population health. The goal of this IR is to see change in how young adults perceive the issue of AUD and the need to maintain cognitive health.

Essential VIII

This Essential focuses solely on the APRN-DNPs to demonstrate advanced levels of clinical judgment, coordinated thinking that generate skill and the delivery of evidence-based care. The DNPs become versatile in their responsibilities of mentoring others within the profession, conduct comprehensive assessments and guide patients through their complex health challenges The DNPs function at an advanced practice level (AACN, 2006). The outcome of this review is that as the author reviewed multiple literatures, the researcher is able to identify the strength and weakness of the young adult population combating AUD related to memory impairment.

Formulate Inclusion and Exclusion Criteria

Inclusion Criteria

This is adopted to narrow down the study search. Peer reviewed articles published in English within the past five years were included. Studies that addressed mild to moderate memory impairment related to alcohol use disorder among young adults (18-44 years old) were included. The author's focus was on studies that systematically searched for articles on how AUD bring about mild to moderate memory impairment, explicitly discussing the impact, consequences and/or tenacity of misuse. Peer reviewed journals written in English, published from 2017 to 2021 and global population. Also included is the combined treatment intervention of restorative rehabilitation and comprehensive evidence-based medical detoxification. The decision to make this search a global review was based on the crippling effect of alcohol use disorder universally impacting and its negative impact on families, community, nation and international systems. Male and female young adults were included equally.

Exclusion Criteria

Articles reviewed were limited to 5 years search and excluded literature published prior to 2017. Study excluded literatures that addressed memory impairment related to AUD vaguely and generally lacking empirical findings; or the research data were not complete. Studies of MCI with non-alcohol drinkers were equally excluded from the study as well as those with severe cognitive impairment. Multiple articles that were published based on the same cohort, and studies that lack methodological quality were excluded. Conditions with history of neurological and major psychiatric disorders e.g., bipolar disorders, schizophrenia or severe major depression; current suicide, severe somatic illnesses and regular intake of psychotropic medications over the last 3 months were all excluded. All other substance use disorders (except for nicotine) that did not align with the purpose of the study were equally excluded as well as studies not published in English. The Melynk level of evidence was applied to evaluate articles for level of evidence and

those with level seven evidence were excluded from the scholarly review. Finally, articles with small sample size (around 10% of the population) that could limit the number of equal-population strata in generalization of findings were excluded as well.

Conceptual Framework (Whitmore & Knafl)

An integrative review method is the broadest type of research that permits the concurrent inclusion of experimental and non-experimental research in order to better understand a study of concern. It hypothetically plays a significant role in evidence-based practice (EBP) in nursing and has been advocated as vital to nursing science and nursing practice (Kirkevold 1997; Estabrooks 1998; Evans & Pearson 2001; Whittemore &Knafl, 2005). Conceptual frameworks are important underpinnings for research, and other endeavors such as evidence-based practice (EBP), quality improvement (QI) and program evaluation. A very vital aspect of conceptual framework is its ability to broaden the researcher's knowledge on the study of interest as well as offer a model for designing, implementing, evaluating, and interpreting the findings of the research study. It was postulated in studies that in the application conceptual framework increase study rigor, serves as identifier of variables for study, improve accuracy, design measurement tools, remain bias free as well as develop and guide implementation of evidence-based interventions. There is lack of consistency within a project as well as in relation to previous literature about the topic without a conceptual or theoretical framework (Johnson, 2021).

The Roles of Conceptual frameworks

The chosen conceptual framework that underpins this scholarly project is the Whittemore and Knafl (2005) framework. Following the five stages: (1) problem identification, (2) literature search, (3) data evaluation, (4) data analysis, and (5) presentation of findings of the framework, the researcher followed each step guardedly (Whittemore & Knafl, 2005).

To better sustain the framework, this review study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (University Libraries, 2022), which covers the 5 steps within Whittemore & Knafl (2005) framework. The PRISMA checklist includes information about incorporated studies characteristics, risk of bias within the studies, summaries findings, strength of evidence and review limitations. The PRISMA is a 27-item diagnostic-test checklist of a four-phase flow diagram for original and updated reviews used to improve transparency in systematic reviews. These items cover every aspect of the manuscript, including title, abstract, introduction, methods, results, discussion, and funding. The articles were further simplified based on the title ad abstract relevant to the project (University Libraries, 2022; Page et al., 2022).

Implementing this framework could help in establishing educational and treatment interventions that are nationally and culturally focused to promote the proposition of combining RR and CEBMD to improve mild to moderate memory impairment among the AUD population

Ethical Considerations

With reformations in clinical practice, the need for human subject privacy and confidentiality of their personal data needed to be protected (Nurmi et al., 2018). Even though this scholarly project is an integrative review, the DNP researcher for this scholarly study did complete research ethics training: the Collaborative Institutional Training Initiative (CITI). Researcher equally obtained an Institutional Review Board (IRB) approval for "No Human Subjects Research" (an integrative review not considered human subjects research) to ensure protection of human subjects. Copies of the CITI certificate and the IRB approval letter have been provided in the appendix (Liberty University, 2021; Nurmi et al., 2018).

Ethical Consideration & Christian Worldview Integration

Moral and ethics are closely related, and every individual should have moral principles in their daily conduct; it guides individuals' daily conduct. Christian ethics accentuates morality with the central theme of devotion to God. God made human beings with the astronomical purpose of glorifying God and enjoying His presence forever (1 Corinthian 10:31 & Psalm 16:11), to honor protect and have mutual respect. Christian worldview on ethics stirs people to long for God and worship Him with our lives because man is created to live in the consciousness of God. From the Christian worldview's perspective, making ethical choices must be two facets: to glorify God and promote human wellbeing (health). These are rooted in walking in love and compassion for God is love (1 John 4:7-8). A vital goal of ethics is to move people in the direction of having ultimate relationship with the Triune God of the universe as well as protects fellow humans right by loving one another (Liederbach, 2019). Matthew 7:12 affirm this by saying, "In everything, do to others what you would want them to do to you. This is what is written in the Law and in the prophets." Micah 6:8 then narrate, "He has shown you, O man, what is good; and what does the LORD require of you but to do justice, and to love kindness, and to walk humbly with your God?"

SECTION TWO: COMPREHENSIVE AND SYSTEMATIC SEARCH

Literature Search Strategy

In piloting this integrative review, the researcher progressively and systematically reviewed CINAHL, PsychINFO, PubMed, and Cochrane Library databases to obtain research information. The search field included titles and abstracts with exclusive key words that were engaged in the literature review search addressing the treatment and management of this scholarly project comprise of "Alcohol use disorder (AUD)," "Adults (18-44 years old),"

“memory impairment,” “Cognitive therapy,” “Restorative rehabilitation, “comprehensive evidence-based medical detoxification,” To boost the efficiency of the literature search, the author of this study consulted with the Liberty University librarian designated for the nursing department to simplify the literature search.

The parameter of the search was limited to articles published in English language within the past five years. Literature search and reference list examination were imported to EndNote and duplicates were eliminated. Full text of all hypothetically studies were retrieved and the initial database search generated 1,546 articles. With advanced search, 840 duplicated articles were removed. For more comprehensive search results to better consolidate the effect of AUD on the brain the term alcohol related cognitive impairment (ARCI) was used in place of mild to moderate memory impairment due to alcohol use disorder and this yielded 706 articles. The author then screened the remaining 706 articles by exporting them through EndNote via Covidence (a screening and extraction tool) to streamline articles and the quality of data. The tool equally screened the title and abstract and further eliminated 400 studies that did not meet the inclusion and exclusion criteria. Finally, detailing a full text screening on the remaining 306 articles. Further search with the addition of neuropsychological and pharmacological interventions streamlined the search results by removing 281 articles and finally returned 25 articles to complete the study with.

Critical appraisal of the remaining 25 studies was accomplished using the Critical Appraisal Skills Programme (CASP) checklist. 3 articles addressed the unexpected findings reviewed in this study. A total of 56 published systematic reviews were added. 1,546 articles were identified by the various database searches and 298 articles (n=298) were found through

PsychINFO. CINAHL yielded the most unique references (n=908), while PubMed and Cochrane Library covered the remaining 340 articles (n=340). Three researchers independently

Critical (Quality) Appraisal

A critical appraisal is a strategic step of a systematic review that carefully and systematically assess the credibility (trustworthiness), validity or methodological rigor of the original research study relevant to clinical decision making. Primarily, it aids in reduction of information overload as weak and immaterial studies were removed, distinguish any possible bias, and assess how useful and applicable studies could be in the clinical practice. (Tod, et al., 2021). The researcher appraised the study critically by focusing discussion of the study's methodological rigor in terms of the study's setting, prevalence and data sources within the Results and Discussion sections. This helped in outlining how well the study's method answered its research question. Often checklists are used to assess specific studies in a consistent, unambiguous, and methodical manner. Through thorough consideration of the study's methodological rigor a researcher easily assesses study bias and quality even though it contains bias.

To complete the critical appraisal for this study, the researcher utilized the Critical Appraisal Skills Program CASP checklist. The 10 questions checklist was used with 3 broad issues considered: (1) the validity of the results of the study, (2) what the results are and (3) will the results help within the given community? The CASP checklist aided in evaluating the study's design, systematic reviews, methodology, clinical prediction rules and quality. The quality of the study's transparency, accuracy, purpose, applicability, accessibility, and specificity were determined (Critical Appraisal Skills Project, 2019). Additionally, a comprehensive critique and leveling matrix of evidence was used to survey essential qualities of the selected articles as

well as allow the researcher to compare study designs by level of evidence. Finally, the matrix level assisted detecting the study's setting, theme, sample size and relating interventions to study outcomes (see appendix for table).

Synthesis

Multiple connecting literatures were found for this study and the findings are relevant and within the context of the clinical questions. The statement purpose and clinical question form the criteria for search for the literature and ideas gathered from the various literature reviews had justifiably answered the clinical question that supports the project. According to studies that had discovered under-diagnosis, under-recognized and under-treatment, numerous gaps were discovered, hence this IR proposed the combination of the two different treatment modalities of restorative rehabilitation and comprehensive evidence-based medical detoxification to correct memory impairment in AUD (Bruijen et al., 2021)). The available data reflected numerous variables in terms of both genders, different types of alcohol intake, different types of study designs and different effect value. Studies have revealed the benefits of combining restorative rehabilitation with evidence-based medical detoxification in addressing memory impairment highlighting this as the potential standard practice in AUD control initiatives.

Although studies on RRT and CEBMD in regards ARCI are still limited, a particular study ascertains cognitive rehabilitation therapy as a designed intervention to help individuals with cognitive deficits based on the neuropsychological profile of the patient with substance use. The study reported approximately 50-80% of individuals with AUD have changes in cognition which affect their prognosis and treatment (Rajeswaran & Bennett, 2018). This study focuses on a holistic approach to Neuropsychological rehabilitation, which has the potential to fully restore memory impairment. The review found recurring themes on CRT ownership and

diverse approaches. The study explored the approaches from cognitive retraining to holistic approach, to circuitry approach and EEG neurofeedback (Rajeswaran & Bennett, 2018).

Compared to CBT, though the volume of literature that explored CRT among alcohol use disorders (AUD) is limited but the findings are frequently connected with neuropsychological deficits correction (Rajeswaran & Bennett, 2018). Though long-standing management modalities have shown cognitive behavioral therapy (CBT) to be an effective treatment, but it has paid minimal attention or completely neglected patients' neuropsychological functioning. Hence, insufficiency of CBT approach for patients suffering from ARCI is noted as not being able to preserve cognitive capacities such as episodic and predictable memories and executive functions (Caneva et al., 2020). Hence, this study explored the use of a more consistent therapy known as restorative rehabilitation therapy (part of CRT) in combination with comprehensive evidence-based medical detoxification because the process of CRT covers neuropsychological functioning of memory and executive functions.

The review summarizes existing scientific findings and will fill the gap in this study to promote the prevention of mild to moderate memory impairment, halt the progression of existing cases and at the same time serve as a reference point for national policies on alcohol use disorder creating prospects and challenges for future types of guidance. This systematic review methodically explores the dose–response relationship between alcohol intake and mild to moderate memory impairment, exploring the benefits of the treatment interventions. The overall goal of the results is to provide high-quality evidence of research to better combat alcohol use disorder and prevent memory impairment (Yao, et al., 2020).

SECTION THREE: MANAGING THE COLLECTED DATA

Design

The project, which is a systematic integrative review by design, is developed under the Whittemore & Knafl framework in conjunction with EBP. An integrative review plays a countless role in evidence-based practice (EBP) initiatives within the nursing body. As proposed by the Whittemore & Knafl framework, a practice change would be appraised with a pilot study (Whittemore & Knafl, 2005). This pilot study was conducted including experimental, non-experimental, and observational study designs that would control the study's outcome measurements. by adopting booth qualitative and quantitative studies (inclusive). As a specific form of systematic review, it would systematically appraisal existing literature following PRISMA statement.

The study was evaluated, interpreted, and then integrated into meaningful conclusions to answer the clinical question and share new knowledge about the project. For this integrative review, the researcher explored the electronic databases from September 2021 through March 2022 covering the process stages of preparing the clinical question, searching, or sampling the literature, data collection, critical analysis of the studies incorporated, discussion of results and presentation of the integrative review. Articles incorporated into the study were appraised to connect interventions to outcomes thereby making it possible to assess for the quality of evidence.

Measurable Outcomes

Each evaluation was organized according to each measurable outcome. The measurable outcome was outlined to identify variables (personal, social, and spiritual) in addition to the conforming statistical test and suppositions to evaluate the outcome. This process is to guarantee

the selected literature aligns with the objective of the study and would be repeated until the evaluation of each measurable outcome is fully discussed. The variables were either dependent or independent variables. Independent variables included mild to moderate memory impairment and alcohol use disorder, while dependent variables comprised the restorative rehabilitation and the comprehensive, evidence-based medical detoxification for the treatment of the identified study.

The most shared measurable outcomes used in alcohol clinical trials are the frequency and/or intensity of alcohol consumption, which are most frequently estimated using the Timeline Follow-back method. These instruments offer daily alcohol consumption data, which are often accumulated to create the primary outcome measure. Universally used aggregations include both continuous and binary outcomes. Continuous outcomes include the percentage of days abstinent (PDA), drinks per drinking day (DDD), drinks per day (DPD), and the percentage of heavy drinking days (PHDD). “Heavy” drinking is defined as 4 or more drinks in a day for women and 5 or more drinks for men. Binary outcomes include any drinking and no heavy drinking and composite clinical outcomes.

Data Analysis/Collection

Evidence (data) gathered for this integrative review was collated from multiple literatures, comprising of questionnaires, surveys, interviews, and all were critically appraised before being included in the analysis. Researcher ensured the literatures adopted for the project cover study setting, methodology and analysis. Pertinent data relating to effect of AUD on memory, restorative rehabilitation and comprehensive, evidence-based medical detoxification were captured, analyzed, and interpreted. In this scholarly project, detailed plan patterned after each of the project measurable outcomes were described. The statistical measures within the

reviewed literature were adopted to ensure that the measurable outcomes, type of data collected, and statistical analysis are appropriate for the scholarly project.

Intervention

This review measured the worth of the interventions adopted by this study to corroborate or negate the supposition that combination of Restorative rehabilitation and comprehensive, evidence-based detoxification proposed the best outcome compared to the use of each intervention alone. The review thoroughly evaluates the assumed treatment interventions to ensure that the young adult population with mild to moderate memory impairment due to alcohol use disorder receives substantial treatment that will promote optimal, holistic mental wellness. The project intervention can determine the efficacy of combined treatment approach rather than the use of each intervention singly. Appraising the intervention and outcomes systematically aided in detecting the study gaps and the need to promote that treatment awareness (education) has further validated that the advantage of combining restorative rehabilitation therapy (RRT) and comprehensive, evidence-based detoxification (CEBMD). Timeline of each process was addressed in detail to include specific action and anticipate completion date.

SECTION FOUR: QUALITY APPRAISAL

This is where discussion and interpretation of all encountered during the review would be narrated with its clinical significance. This would include how literature that met the inclusion criteria and the different methodology used. Explore if the review is generalizable. This scholarly project identified several methodology deliberations regarding the study design, methods, data collection and quality assurance. The methodology in view of the study design will cover searching for literature, meeting to review with the project chair to seek her input. Appropriate

search engine adopted for the data collection, and researcher met with the nursing librarian periodically to review-selected literature closely (Badu et al., 2019).

Alcohol Use Disorder and Memory impairment

Alcohol is the most common social drug used globally and according to WHO (2018) the effect of harmful use of alcohol leads to 3 million deaths yearly representing 5.3 % of all death. The menace of Alcohol use disorder (AUD) lead to adverse social, occupational, or health consequences as well as negative impact on family members, friends, co-workers, and colleagues. AUD is considered a brain disorder, with possible lasting alterations in the brain potentially predisposing its victim vulnerable to relapse and memory impairment. The national survey projected report in 2019 stated 14.1 million adults ages 18 and older (5.6 percent of this age group) were affected by AUD while the youth (adolescents ages 12–17) estimation was 414,000 (NIAAA, 2020). Research has consistently shown that the tendency to drink the heaviest occurs in late teens into early to mid-twenties with the likelihood of young adults' binge drinking to drinking heavily (NIAAA, 2020)

Binge drinking is a common occurrence among young adults, despite being associated with disregard of the negative consequences that come with the disorder. Binge drinking is a form of heavy drinking concomitant with deficits brain executive functions, including working memory (memory impairment). Once the working memory is compromised it leads to inability of an individual to modulate their behavior, which may contribute to increased use of alcohol (Loop, 2020). Scientifically, alcohol use disorder targets a vital part of the brain (hippocampus-the seat of memory function) causing reduction in volume. Though the hippocampus plays a role in executive function, its primary involvement is in cognitive functions, which is particularly targeted by ethanol. Ethanol impairs the cellular and synaptic plasticity mechanisms leading to

changes in the neuronal morphology, neuronal communication, and eventual neuronal death (Mira et al., 2020)

Alcohol Use disorder (AUD) Knowledge Gaps

One of the fundamental knowledge gaps in the treatment of AUD is the lack of accelerated translation of AUD research into evidence-based patient care. Research have disclosed that lots of Americans experience AUD, while only a fraction of those affected by AUD seeks treatment with a high prevalence of non-adherence to treatment noted among such group of people (Ray et al., 2021). According to Glass et al., (2017), this could be attributed to the prime gap that exists in the number of those affected by AUD compared to the number of treatment available. Another vital aspect of the AUD knowledge gap that is observed in those with alcohol related cognitive impairment (ARCI) is failing to report subjective complaints probably due to lack of insight into their own cognitive deficits or the possibility of symptoms being obscured by the addiction itself (Walvoort *et al.,* 2016; Bruijnen et al., 2021).

Considering the existing treatment background for AUD with the terminal goal of improving clinical care leading to memory health/restoration, this research project's focus is on translational care by fostering the research questions along the translational management. Incorporating the NIAAA-led proposals to educate the public about identifying alcohol problems (e.g., Rethinking Drinking) backed up by need to promote high quality treatments (e.g., Treatment Navigator) into care plan, this project uphold its proposed treatment plan of combining restorative rehabilitation (RR) with comprehensive, evidence-based detoxification as a treatment modality best suited for the management the population with ARCI. It is the core responsibility of provider from various fields to provide basic knowledge about alcohol following NIAAA core resource plan. The overall goal is to seize every opportunity to share

evidence-based resources and to offer the public insights into effective, evidence-based alcohol misuse treatment that is well founded on research as a priority (NIAAA, 2018; Ray et al., 2020).

Mild to Moderate Memory Impairment Knowledge Gaps

Mild to moderate cognitive impairment is one of the four stages of cognitive failure. About 50% and 80% of AUD population that abstained early from use exhibit mild-to-moderate deficiencies in intellectual functioning and motor deficits, with a substantial heterogeneity in the pattern and severity of deficits. The visuospatial abilities and higher cognitive functioning being the most prevalent alcohol-associated brain impairments generate from anatomical brain damage refers to a reduction in brain volume. In addition to the impairment of executive functions frequently associated with AUD, which leads to impulsive decision-making experiences, this set of population consistently undergo memory deficits, due to difficulty in retrieval materials associated with ineffective learning strategies (Sullivan et al., 1992; Caneva et al., 2020).

Effective and accurate assessment in detecting cognitive impairments is foundational to educating and projecting evidence-based treatment in alcohol-dependent patients (Bernardin et al., 2014; Caneva et al., 2020). Since maintaining abstinence is a challenging goal in people with AUD treatment program, (Fein et al., 1990; Caneva et al., 2020) and relapse has constituted a major issue relevant to treatment outcome, it is imperative for the treatment interventions to appropriately and sufficiently address patients' neuropsychological functioning. The scholarly study proposed treatment plan of combining RR with CEBMD would sufficiently address this issue.

Restorative Rehabilitation Therapy (RRT) and Its Knowledge Gaps

Glass et al., (2017) attested to the importance of promoting awareness of the danger of unhealthy alcohol use (AUD) and how to effectively manage the issue. Alcohol is dangerous to the central nervous system and can cause significant brain damage and AUD by nature of its association with cognitive deficits warrants cognitive interventions to facilitate cognitive recovery and improvement of long-term drinking outcomes and psychosocial (Nixon & Lewis, 2019). Glass et al., (2017) proposed the need for new treatment methodologies in delivering effective services to larger population with AUD. In view of this, this researcher reviewed the benefits of cognitive rehabilitation Therapy (CRT) as one of the possible approaches to better serve the AUD population. CRT is an organized functionally oriented service, which renders therapeutic activities in view of the assessment and understanding of the patient's cognitive deficits.

CRT is divided into two main groups: the restorative rehabilitation and compensatory CRT with four steps namely: (1) Education, (2) Process training (3) Strategy training and (4) Functional activities training. This study considered the Restorative rehabilitation (RR) aspect of CRT in improving cognitive function. It does this by reestablishing or strengthening the functions of the defected part of an individual's cognition. Restorative rehabilitation therapy (RRT) is a form of cognitive training that improves performance and cognitive recovery with long-term outcomes in those with AUD. Since abstinence cannot of itself confer a lasting effect, cognitive training, or rehabilitation (RR) would be adopted to enhance the cognitive function thereby generating a potentially lasting improvement and recovery (Nixon & Lewis, 2019). Another key role of RR is its ability to improve the neuropsychological cognitive state with reported improvement in executive functions, visuospatial abilities, and memory (Bernadin et al.,

20114; Cavena et al., 2020). This is backed-up by studies that attest that between 50% and 80% of alcohol-dependent patients present with impaired cognitive functions.

However, the knowledge gap this generates is that this therapy has not been used frequently in those with AUD and a proposed intervention to bridge this gap is the implementation of conceptual framework that integrates appropriate, behavioral, and neurobiological change (Nixon & lewis, 2019). Another major gap is in assessing the role of cognitive rehabilitation because of the limited number of studies addressing whether treatment benefits will generalize to real-life situations and behaviors (Picon, & Eshel (2020).

Alcohol use disorders are associated with a range of cognitive deficits. Cognitive interventions have been proposed to facilitate cognitive recovery and improve long-term drinking outcomes and psychosocial adaptation. This review summarizes current literature and offers direction for Cognitive rehabilitation therapy (CRT) is a comprehensive group of therapies used by professionals to improve and restore cognitive impairment. It has 2 aspects and the restorative aspect and the Restorative CRT/rehabilitation or cognitive training as a component of treatment improves cognitive function by reestablishing or strengthening the functions of the defected part of an individual's cognition. Restorative rehabilitation is a form of cognitive training to improve performance and cognitive recovery and long-term outcomes in those with AUD. Series of studies have asserted the benefits of abstinence but maintain the non-effectiveness of conferring a lasting effect. What cognitive training or rehabilitation does is to enhance the cognitive function that abstinence or withdrawal has generated bringing about cognitive improvement and recovery (Nixon & Lewis, 2019). However, the knowledge gap this generates is that this therapy has not been used frequently in those with AUD and a proposed

intervention to bridge this gap is the implementation of conceptual framework that integrates contextual, behavioral and neurobiological adjustment.

Comprehensive Evidence Based Medical Detoxification (CEBMD) and Its Knowledge Gaps

According to the Addiction Center (2022) cognitive training protocols have shown benefit in a variety of populations but have been examined infrequently in persons with AUDs. This overview indicates significant opportunity for cognitive improvement and recovery and thus a strong potential role for training protocols. However, supportive data are not robustly obtained. We suggest that one step in bridging this gap is the implementation of a conceptual framework incorporating contextual, behavioral, and neurobiological. Detoxification is the first step to win over AUD. Detoxification is a form of withdrawal that is medically channeled to get the substance (alcohol) out of the body. The National Institute on health (NIH), and the Addiction Center offer it as a phase of medical interventions, which usually encompasses counseling and or medications regimen, as a form of helping victims of alcohol addiction to overcome physical and psychological reliance on alcohol (NIH, 2020; Addiction center, 2022). Alcohol detoxification (detox) as a normal process the body assumes in its attempt to free the systems of waste products and toxins from excessive, long-term alcohol consumption requires series of interventions (Addiction Center, 2022).

The Process of Detoxification

This integrative review (IR) proposed a comprehensive evidence-based medical detoxification (CEBMD) treatment as a form of alcohol detoxification regimen. Detoxification can safely take place at either inpatient or outpatient facilities, while studies recommend inpatient, intense medical monitoring for heavy alcohol users. Alcohol detox by standard includes established treatment plan, skills learning, psychological counseling, medication

therapy, psychotherapy and spiritual practices. Usually, the detoxification process involves 3 steps: (1) **Intake:** The medical team perform a comprehensive review of drug, medical, and psychiatric histories of incoming patients to fully understand individualized situation. (2) **Medication:** involves medications management to mitigate withdrawal symptoms. Medications can serve dual benefits as they equally target co-occurring disorders. (3) **Stabilization:** This stage embraces the two previous stages, and the patent has reached a state of mind and body (Addiction Center, 2022).

It is noteworthy for the study to reflect the Federal Drug (FDA) approved medication treatment for AUD. According to the Addiction Center (2022), these medications: Disulfiram, Acamprosate (campral) and Naaltrexone (oral and injectable) are the three FDA recommended medication regimen. Other medications that could accompany these are benzodiazepines (long acting) and Thiamine (Vitamin B1) supplement. As part of treating those with AUD, the provider recommends Thiamine therapy under the presumption that its deficiency could generate to the risk of developing Wernicke syndrome, Korsakoff syndrome, cerebellar degeneration, and cardiovascular dysfunction. With the potential benefits of preventing thiamine deficiency, oral thiamine supplementation is deliberated on as part of managing mild to moderate memory impairment caused by AUD (Shakory, 2020).

Numerous studies have done tremendous work on the global harm and burden of alcohol use disorders; hence the treatment gap is huge, especially in low- and middle-income countries (Zewdu et al., 2019). One of the major gaps in managing ARCI is poor or lack of insight into the cognitive deficits of AUD as well as poor comprehension of the problem of AUD (Bruijnen et al., 2021; Glass et al., 2017). Stigma and series of practical barriers equally impede the treatment received in alcohol detoxification (Glass et al., 2017; Zewdu et al., 2019). The unmet treatment

needs is huge and integrative treatments interventions to reduce stigma, promote insights and enhance community awareness through education are recommended interventions with the goal to change public awareness about AUD. Barriers to care, stigma reduction and awareness are recommended through intense education to facilitate the approval of alcohol treatment services. Patients should be screened at community level to detect cases at early stage and prevent further consequences of the AUD. Other measures could be to regulate locally produced alcoholic beverages as well as follow recommendation to assess the link between psychological issues, disability with AUDs in local setting. Further future Qualitative research should be adopted to explore barriers to care, awareness of problems and the effect of stigma on AUDs and how to better combat these (Zewdu et al., 2019).

Combination of Restorative Rehabilitation Therapy (RRT) and Comprehensive Evidence-Based Medical Detoxification (CEBMD)

According to the study conducted by Glass et al., (2017), a large percentage of those with AUD present with mild-to-moderate memory disorder, with fewer comorbidities, and maintain a stable social life with lower treatment rate compared with those with severe AUD. However, there is still a great need to refer this population to efficient, intensive specialty treatment services that offer evidence-based treatment and connection to available community programs (AA, women for sobriety, Al-Anon & Alateen) (Glass et al., 2017). Results from multiple studies expressed different opinions about the combination of these two treatment interventions. An outstanding study by Glass et al., (2017) calling for innovative approaches to address AUDs has led this IR author to recommend the combination of treatment. However, more research work is still required to firmly establish the benefits of combining RRT and CEBMD in managing

mild to moderate memory impairment among young adults with AUD as a proposed best treatment outcome compared to using one of the treatment alone.

Damages in executive functioning and memory capacity within the brain bring about decreased efficacy of cognitive and behavioral treatments (Bernardin et al., 2014; Blume & Alan Marlatt, 2009; Blume, Schmaling, & Marlatt, 2005; Caballeria et al., 2020). This alcohol related neurocognitive deficits impact patients' ability to learn and recall new information, goals setting skill and inability to acclimatize to new environmental demands (Rupp, 2012; Caballeria et al., 2020). It has also been noted to cause increased impulsivity associated with altered decision making. The aftermath of alcohol-related cognitive impairment (ARCI) is the victim presenting with poor self-efficacy, decreased motivation and treatment compliance (Bates et al., 2013, 2006; Bernardin et al., 2014; Caballeria et al., 2020), as well as the tendencies to drink more per drinking day, thus ending with poorer quality of life (Horton, Duffy, & Martin, 2015; Rensen, Egger, Westhoff, Walvoort, & Kessels, 2017; Caballeria et al., 2020).

With series of studies indicating that ARCI is still under diagnosed (Hayes et al., 2016; Horton, Duffy, & Martin, 2014; Soler González et al., 2014; Caballeria et al., 2020), under-recognized (Sachdeva et al., 2016) and undertreated (Barrio et al., 2016; Horton et al., 2015; Manning et al., 2017; Caballeria et al., 2020) the researcher is strengthened to propose that combining RR with CEBMD would serve as the best treatment modality for ARCI while further research is ongoing concerning the issue. Along with this treatment intervention, author is equally calling for bridging the gap between the delays in translating AUD research findings into EBP clinical treatment (Ray et al., 2020). Furthermore, specific attention should be paid to some factors that may be associated with cognitive impairments, such as age, education, and duration of abstinence, and history of substance abuse use disorder. Alcohol rehabilitation treatment

should therefore be adapted as individualized plan for patients with cognitive impairments to reduce the recycling of patients through the treatment centers and prevent patients from going through repeated detoxifications (Caneva et al., 2020).

SECTION FIVE: DATA ANALYSIS AND SYNTHESIS

Discussion

The study mainly shows that to effectively address the issue of mild to moderate memory impairment among young adults with AUD problem through an integrative review, treatment interventions that will target the neuropsychological aspect as well as follow the FDA treatment guidelines must be pursued. Through thorough assessing, critiquing, and synthesizing up-to-date literatures, the extent and nature of the problem was determined with scientific implications to improve management. The study background indicated AUD is a global public health issue with 3 million deaths (5.3% of all death) recorded in 2016 (NIAAA, 2021). The clinical question assisted in optimizing plan of care tasking the DNP by factoring in the *DNP Essentials.*

The study's findings based on multiple researches identified several knowledge gaps, treatment barriers, risk factors as well as unexpected findings in the management, which still delay the prompt, safe and excellent care those with ARCI require. Concerns for AUD treatment and memory improvement have led to series of therapy and treatment proposals from different authors and government agencies, but the most pressing approach is a call for the accelerated translation of AUD research into EBP. This requires effective collaboration of the research team and clinician t ensure easy transition of research to clinical practice (Bruijnen et al., 2020; Glass et al., 2017). Further discovery is the urgent need to promote awareness through dynamic education strategies (Bruijnen et al., 2021). Also, findings emphasized on taking drastic measure

to prevent memory impairment by promoting the benefits of the combined treatment interventions of RR and CEBMD (Glass et al., 2017). According to the reports of series of studies presenting that ARCI is under-diagnosed, under-treated and under-recognized (Caballeria et al., 2020), the need for further research study must be a priority.

Unexpected Findings

The fact that AUD constitute major burden does warrant its needing prompt and efficient medical attention but the problem has remained neglected far too long, with most people untreated, even in high-revenue countries. Studies have postulated AUDs treatment gap as an estimation of about 78% globally (Sewdu et al., 2019). Alcohol-related cognitive impairment (ARCI) is highly prevalent among patients with alcohol dependence (Caballeria et al., 2020). Alcohol use disorder (AUD) is vastly widespread globally and is economically costly to individuals and society. In United States of Americans, millions suffer from AUD, however only a small subgroup seeks treatment. One of the knowledge gaps driving the limitation to seeking help for AUD is because the condition is highly stigmatized and significant data have shown that stigma undermines efforts to seek and receive care for unhealthy alcohol use (Glass et al., 2017). Active and ongoing current studies are discussing what constitutes AUD recovery. A closer look into AUD treatment drew awareness to the clinical outcomes used to evaluate innovative treatments, both pharmacological and psychosocial and a noteworthy major challenge to this treatment is in the delay in translation of AUD research findings to clinical evidence-based practice care (Ray et al., 2020). This is a major gap in the management of AUD as well as ARCI and this reviewer discovered some unexpected findings that could possibly be generating these gaps in treatment management.

Though studies have postulated that cognitive impairment possess unintended effect on treatment outcomes, series of other studies have systematically reviewed available treatments for ARCI and discovered that the disorder remains under-diagnosed, under-recognized and under-treated (Caballeria et al., 2020). Detailed neuropsychological assessment or screening of the cognitive impairments could serve as the fundamental to optimally enroll patient in management strategies whether at mild, moderate, or severe level but if not properly investigated or administered it could make ARCI to mostly remain under-diagnosed (Bernadin et al., 2014; Caballeria et al., 2020). Glass et al., 2017) proposed that screening and brief intervention has proven valuable in reducing self-reported alcohol consumption among some with AUD, but there are still gaps in evidence for its effectiveness.

The issue of patients being under-recognized, diagnosed or treated is a big challenge within the medical practice and studies are showing an alarming rate of lack of evidence for referral to treatment as part of screening and brief intervention, though screening and brief intervention was designed to be a population-based approach, its reach. Implementation of the screening and brief intervention in real clinical practice also remains a challenge (Glass et al., 2017). Data analysis by Dryden (2021) of Washington University states that data findings gathered from 2015 through 2019 via the National Survey on Drug Use and Health, found that about 8% of those surveyed met the current criteria for alcohol use disorder. Further survey indicated 81% of those that met the criteria had received medical care at one point during the previous year with only 12% reported being advised to cut down on their alcohol use, 5% were offered information about treatment, and only 6% received treatment. Most of this population were not referred by their doctors but sought out treatment on their own.

Also, Sewdu et al., (2019) alluded the prevalence of AUD between both genders predisposes to multiple ill-health with relating treatment gap being very wide. Findings stated about 87.0% (only 13% sought help) of AUD participants with an AUDIT score ≥ 16 had never asked for help for their alcohol problems while 70.0% of the population reported high suppressed stigma. Findings relating to under recognition, diagnosis and treatment also cited barriers to seeking help regarding AUD victims as wanting to handle the problem on their own, due to believe the issue will disappear, stigma and being unsure about where to go. This may be due to multiple barriers such as individuals not being treated or not responding to services provided due lack of the accessibility and availability of services, stigmatization and mental health status. Other factors could manifest in the form of Some of delays to care, and discontinuation of service use due to lack of knowledge about the qualities and treatability of the disorder; lack of awareness about how to approach assessment and treatment; discrimination against those with AUD, as well as higher probabilities of discriminating against those already diagnosed (Sewdu et al., 2019).

Recent research had recommended rethinking alcohol interventions in treatment practice, emphasizing on the development of key research, and policy recommendations to combat these gaps (Glass et al., 2017). Sewdu et al., (2019) suggested narrowing the wide treatment gap as well as improve help seeking behavior among people with AUD will vitally require exploring the reasons why AUDs populace are not seeking treatment with primary focus being on stigma and low awareness. Another study further proposed addressing evidence gaps in screening, brief intervention, and referral to treatment, innovations improvement to address severe AUD within primary care (patients go to them first), providers willingness to discuss the stigma of AUD with clients as it could obstruct the progress in prevention and treatment. Finally, practitioners are

urged reevaluate existing conceptualizations of AUD that may influence health care, as well as identify plans needed to improve the capacity for addressing unhealthy alcohol consumption globally (Glass et al., 2017). Concentration of interventions must be targeted at changing public awareness about alcohol use disorder; its treatment, locations treatment offered at and stigma reduction to promote the acceptance of alcohol treatment services. Screening at community level is equally vital to early detection of cases and to prevent further consequence of the problem. Interventions could also be channeled toward the regulation of locally produced alcoholic beverages (Sewdu et al., 2019). Good quality prospective studies are recommended to further explore both providers and recipients' aspects connected to under-recognition, under-diagnosis and under-treatment of alcohol use disorder (AUD) and alcohol related cognitive impairment (ARCI).

Implication for Practice

This study's evidence on interventions targeted reduction or eradication of mild to moderate memory impairment among young adults with AUD as it explored the future control of alcohol use disorder (AUD) among young adults (18-44 years old) nationally and internationally and their predisposition to memory impairment and how to tackle this problem through effective treatment modalities. Research on AUD clinical course data has strengthened the general conceptualizations of AUD and adopted approaches to AUD treatment. The challenge of mild to moderate memory impairment in those with AUD, thorough analyses of previous interventions were assessed to identify gaps, succession of the treatment and what needed to be fixed. The strategies to prevent the problem of memory impairment covered primary and secondary preventive measures since the effect of AUD has become a public health issue.

To address the potential challenges of this study, a comprehensive analysis of previous interventions was assessed to identify gaps, successes, and failures. The distribution of gaps in terms of poor insight due to lack of knowledge and treatment non-adherence must be established ahead of time to develop strategies in combating the challenges of AUD and memory impairment. Future campaigns must develop plans to promote the control of alcohol use in excess, abstinence that will promote cognitive health. Educating the masses on raising awareness of the danger of alcohol misuse and promoting effective interventions and adherence will increase understanding the need to own individual treatment plan and following through.

Deliberating over the long-term effects of AUD was a concern as they generated barriers to living a fulfilling life. Reviewing many studies have revealed the risk factors AUD has on the body as a whole such as the development of chronic diseases and other serious problems including High blood pressure, heart disease, stroke, liver disease, and digestive problems. Of most significance is its terrible impact on the brain leading to cognitive impairment. Though most review report the benefits of RR combined with CEBMD but limited recognition or emphasis has been placed on restorative rehabilitation in effectively managing mild to moderate memory impairment related to AUD. Since studies have postulated that chronic alcohol use or binge drinking could lead to brain damage with validated proposition of the advantages of RR over other therapies such as CBT; thus, future longitudinal studies to explore this aspect of treatment further is required to promote clear knowledge and long-term effects of restorative rehabilitation.

Since alcohol misuse is a public health concern, strategies to address preventing alcohol use disorder must be a priority by all nations. United States for example has declared the Month of April as “Alcohol Awareness Month” while in the UK the month of November is their

awareness month. Ultimately, combining RR with CEBMD along can effectively treat memory impairment caused by AUD while effective education to promote awareness has the potential to prevent AUD and cognitive impairment.

Dissemination Plan

Two relevant features in this scholarly project emerged as spotlight for this integrative review: First, how alcohol use disorder can cause mild to moderate memory impairment among young adults ages 18 – 44 years old. Second, how the treatment modalities of restorative rehabilitation and evidence-based comprehensive detoxification can be applied in the effective management of the population affected. To combat these two issues, treatment non-adherence and knowledge deficits due to poor or lack of insight have been addressed as the prime knowledge gaps to promote understanding of alcohol non-therapeutic effect as well as restore cognitive wellness. To bridge these gaps, various avenues to disseminate the findings of the IR have been identified. A primary avenue is for the author of this review to publish this study in to make it generalizable to the population it would benefit. Other ways the author proposes to disseminate the review findings would be through postal journals publications, presentation at seminars, conferences, and symposium.

Globally, nations should embark upon mass education primarily through schools, colleges and government agencies, journal publications, and community access networking should be adopted to promote awareness for providers and the population at large locally, nationally, and internationally. In this era of technology advancement, a wealth of avenues has opened up to disseminate information far and wide but care must be taken to ensure information going out is well assessed and patients basic needs are met prior. The United States of America

has declared the month of April as its "Alcohol Awareness Month," while the United Kingdom (UK)'s awareness month I in November.

Educational Intervention

Strengthening the benefits of preventive measures of mild to moderate memory impairment related to AUD requires strategic efforts to ensure the interventions outlined for the knowledge gaps are well disseminated. Education to promote the awareness of the adverse effect of alcohol use disorder, promote the importance of treatment adherence as well as foster gaining of insight are the key approaches. Based on the review's highlights of abstinence, decreased amount of alcohol consumption, poor insight, cognitive performance and therapies, a need to tackle the problem of mild to moderate memory impairment is paramount and was thoroughly reviewed in the study. Focus was channeled on reducing the knowledge gaps in area of memory impairment thereby increasing the benefits of the restorative rehabilitation and comprehensive, evidence-based medical detoxification through promotion of awareness (education). Other means of dissemination would be through strategized campaigns to promote the awareness of the implications of AUD, especially on memory/cognition. Other measures are digital media such as Facebook, instagram, webinars; factsheets, info-graphics, posters/flyers, community meeting/regional conferences.

Overcoming alcohol use disorder is an ongoing process with the tendency to relapse. It is vitally important to promote means of drawing the population awareness to the danger of alcohol use disorder and the damaging effect it could unleash. This is where the power of education as a mean of dissemination comes in. For adolescents with drinking problem and primarily for those that have never consumed alcohol, the goal of SAMHSA (a government agency) is to address the issue of AUD as well as prevent the start of alcohol use among the young population. A way to

do that is by launching a prevention campaign called “Talk. They Hear You.” to help and support parents and caregivers to start educating children early about the danger of alcohol and other drugs. The aim of the campaign is to reduce underage drinking among youths under the age of 21 by making available to parents and caregivers’ information and resources needed to address these issues with their children. The campaign promotes catching them young before they start drinking at all (SAMHSA, 2022).

The NIAAA promotes evidence-based Alcohol Treatment Navigator, which is intended to find help for adolescents and adults with alcohol problems. Since drug and alcohol abuse is a growing trend among college students, the Alcohol Treatment Navigator is helping adolescents identify the many different issues related to alcohol use and how to navigate the different ways of treatments themselves such as focusing on counseling, especially family therapy. Since treatment medications may not be applicable in adolescents, the need to construct different skills and coping strategies different from adults would be instituted.

To fill the knowledge gaps encountered in the study, the poor insight of victims of AUD and their non-adherence to treatment led the researcher to embrace the NIAAA public health goal. The review follows the primary objective (objective 5a) of NIAAA public health goal: “To Enhance the Public Health Impact of NIAAA-Supported Research. This research promotes the improvement of public awareness of the effects of alcohol on health and wellbeing. To promote the prevention and treatment of AUD and alcohol-related problems through educating all individuals at all stages of life on the effects of alcohol-related problems on health in the United States and globally. This study is generalizable because it has galvanized the progresses made in the diagnosis, prevention, and treatment of alcohol-related problems. It can also draw awareness

beyond AUD by addressing the implication of alcohol misuse on health and the awareness of its full range of consequences, particularly on the brain (Glass et al., 2017; Caneva et al., 2020).

Though there is a widespread recognition of knowledge among researchers and health care professionals that alcohol use disorder (AUD) is a chronic disease of the brain, this viewpoint is not yet evenly spread-out or accepted among members of the public. Reviewing fundamental mission of NIAAA, this scholarly review study therefore posits the necessity to disseminate evidence-based information about alcohol misuse and health to the public, health care providers, educators, researchers, and policymakers (NIAAA, 2022).

Conclusion

Healthcare priority and practice can change following the development of sustainable evidence-based practices that foster the prevention of AUD, project evaluation, the feasibility of the study and how generalizable is the dissemination of the study results. Alcohol being one of the leading contributors to death and disability has led to this review to center its focus on vital areas that could address the fight against AUD: combating mild to moderate memory impairment among young adults with AUD. After thorough review, critique and synthesis of current literature, the review attentively highlights three crucial areas: (1) mild to moderate memory impairment generated by AUD: (2) need provide substantial education to promote awareness of the danger alcohol misuse and (3) the effectiveness of combined interventions compared to just utilizing monotherapy. The review's findings focused on prioritizing identified interventions of combining RR with CEBMD with the potential to promote optimal brain wellness and overall health.

The study further provided substantial evidence that promoting community education nationally and internationally can generate alcohol awareness that would improve insight and promote treatment adherence. The need for experimental and investigative studies to further corroborate that alcohol can predispose individuals to alcohol related brain damage (ARBD) or alcohol related cognitive (memory) impairment. Advanced practice nurses (DNPs) must work tirelessly to provide and promote various recommended evidence-based treatment options that are available by following approved standards and guidelines of care. Supplementary randomized control studies that can compare outcomes of combining restorative rehabilitation with comprehensive, evidence-based medical detoxification are equally assessed. Though combination of treatment interventions (RR combined with CEBMD) appear promising, further future research is much needed to tackle the issues of under-recognition, under-diagnosed, under-treatment of ARCI to foster cognitive wellness and deter excessive alcohol consumption.

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Appendix A

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Clinical Question: Addressing Mild to moderate Memory Impairment Among Young Adults (18-44 years old) with Alcohol Use Disorder and Dependence Through Restorative Rehabilitation Combined with Comprehensive, Evidence-based Medical Detoxification Treatment: Integrative Review

Literature Review Leveling Matrix I

Article Title, Author, etc. (Current APA Format)	**Study Purpose**	**Sample (Characteristics of the Sample: Demographics, etc.)**	**Methods**	**Study Results**	**Level of Evidence (Use Melnyk Framework)**	**Study Limitations**	**Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale**
Article 1 Health research-design, sampling, data collection procedure and quality assurance (Badu et al., 2019)	To explore and synthesizes the available research evidence on mental health research methodological consideration	A total of 491 records from all databases	Observational and experimental studies: cross-sectional design, case-control studies, cohort studies, case report and case series studies	The study results reveal how relevant the qualitative method is to mental health. The integrative review was conducted to synthesize evidence into endorsed	Level V	Study was limited only to English language Limitation mainly related to the search words, language limitations time period and appraisal of methodological quality	Yes. Able to recognize several methodological issues that need serious attention when conducting mental health research

				methodological considerations when conducting mental health research.		of included papers.	
Article 2 Cognitive impairment and rehabilitation strategies after traumatic brain injury (Barman, A., Chatterjee, A., & Bhide, R. 2016)	To appraise and summarize the total evidence of therapeutic interventions for alcohol dependent patients that requires support for detox.	2,590 randomized participants	A randomized controlled trials (RCTs) factorial study design	The results reveals drinking outcomes for women distinct from men by the mean of being treated with naltrexone on drinking days only	Level I: Randomized controlled trials study	Low representation of minority women; result may not be generalizable to women of other ethnic/racial groups Measurement of alcohol consumption is limited to self-report	Yes, a high level yield
Article 3 Long-term effects of alcohol consumption on cognitive function: a systematic review and dose-response	To appraise and summarize the total evidence of therapeutic interventions for alcohol dependent patients that requires	Adults 18 years and above with alcohol dependence	A systematic review and meta-analysis clinical trial for RCTs	Successfully assesses the comparative effectiveness of therapeutic interventions to maintain abstinence for alcohol	Level 1 Systematic review study	Risk of bias in the individual studies was not assessed. Factors affecting detox. Completion and	Yes, a high level yields of evidence that supports detox. Therapy as an efficacious mean

analysis of evidence (Brennan, S.E., McDonald, S., Page, M.J. et al., 2020).	support for detox.			dependent patients following detoxification in community settings		subsequent treatment in detoxified alcohol dependent patients were based on searches of single database	of management in alcohol dependence
Article 4 The course of cognitive performance during inpatient treatment in patients with alcohol use disorder with no, mild or major neurocognitive disorders (Bruijnen et al., 2021)	To assess how cognitive impairment in substance use disorder predict treatment outcome with focus on the prevalence of and differences in cognitive functioning across AUD by the use of cognitive screening at the early stage of addiction tx.	Total of 656 adults patients both male and female gender sampled	Literature review	Study concluded patients using alcohol had a lower total and memory domain score than those using other substances. The younger population scored higher on the screening with the prevalence of cognitive impairment being 31%	Level 3: Cross-sectional study	Underrepresentation of patients using other substances. Full neuropsychological assessment is not adopted. Lack of properly monitoring the research subjects for data collection	Yes, the study calls for detection of cognitive impairment at an early stage of Tx as vital to determine the course of Tx and to maximize treatment
Article 5 A systematic review of treatments for	To review/investigate existing evidence concerning	804 published articles	Literature review	The findings reflect how results point out how cognitive	Level 1: Systematic review	Researchers were prevented from extracting	Yes, a strong study that systematically

alcohol-related cognitive impairment: lessons from the past and gaps for future interventions (Caballeria et al., 2020)	both cognitive and pharmacological interventions for ARCI A total of 804 A total of 804 articles were collated articles were collated			functions can be upgraded by using specific neuropsychological and pharmacological interventions in the improvement of ARCI.		robust conclusions about the efficacy of the interventions. The sample size is small and most of the time not calculated. Finally, the generalization of the results is also impeded by the lack of duplication of the studies.	reviewed past treatments for ARCI as well as reviewed the study gaps for future interventions
Article 6 Cognitive impairments in early-detoxified alcohol-dependent inpatients and their associations with socio-demographic, clinical and psychological	The main aim of this review was to describe qualitatively the cognitive deficits in early-detoxified of AUD patients undergoing rehabilitation Also to explore relevant associations with	41 patients with AUD	Literature review	Study shows 31.7% of AUD patients showed cognitive impairments according to the global score scale. However, 70.7% had an impaired routine on at	Level 4: Cross sectional exploratory study	The sample size is very small and only limited quantitative analyses were performed since the main focus was to describe qualitatively the	A methodology approach that investigates study questions, which was not previously studied in depth. The study

factors: An Exploratory Study (Caneva et al., 2020).	socio-demographic.			least one test of the ENB-2, with particular regard to executive function, visuospatial and memory domains.		cognitive deficits in patients undergoing treatment for AUD. Use of single neuropsychological assessment on early-detoxified patients;	explored the effect early detoxification from alcohol use on cognitive health
Article 7 Rethinking alcohol interventions in health care: A thematic meeting of the international network on brief interventions for alcohol & other drugs (INEBRIA) (Glass et al., 2017).	To identify and manage ways to synthesize recent evidence on brief interventions for AUD in order to rethink alcohol Tx interventions	Sample of 304 patients	Literature review	The study result shows mediation networking on assessment of screening and brief intervention as effective Tx plan for those with AUD by addressing the evidence gaps in screening, developing innovations to address AUD as well as tackle stigma and	Level 3: Qualitative observational study	Poor management in the clinical settings. Clinicians lack of identification of AUD management in the general settings	Yes. The study is calling for how AUD treatment and management needing to change as it provides multiple evidence-based Tx options in the general care setting

				identify need to improve the capacity for AUD care worldwide			
Article 8 Light alcohol consumption does not protect cognitive function: A Longitudinal Prospective Study (Hassing, 2018)	The primary purpose of this study was to examine the effect of long-term light alcohol consumption in terms of cognitive aging while controlling the abstainer bias.	702 participants	Literature review	Study result reveals the effect of alcohol intake in midlife as being low in general and especially lower in women as compared to men.	This is a level 3 longitudinal study	There are no beneficial effects of alcohol on cognitive function and clear negative effects on periodic memory. Study is limited to older population	Same research subjects were repeatedly examined to detect any changes that might occur over a period of time. Yes, the study examined the possible benefits of alcohol in protecting cognitive function.
Article 9 Alcohol Consumption,	To assess the association between long-term AUD and	A total of 702 students	Literature review	Study result hypothesized that	Level 4: Cross-sectional	Variance in cognitive performance	Yes. The study proves

Drinking Patterns, and Cognitive Performance in Young Adults: A Cross-Sectional and Longitudinal Analysis. (Hendricks et al., 2020)	cognitive performance as the study focused on memory planning and reasoning Level 4: Cross-sectional and longitudinal analysis	were sampled		assessing large groups of young adults for treatment enabled the study to narrow down relevant alcohol drinking pattern and an important determinant factor for harmful effect of drinking e.g. binge drinking	and longitudinal analysis	was too large to detect an association between alcohol consumption and cognitive performance	the findings could be generalized based on the ability to decrease the variance in online cognitive testing
Article 10 Association between alcohol consumption and mild cognitive impairment: A protocol of dose-response meta-analysis. (Hui et al., 12019)	The primary aim of this study is to explore the potential dose–response association between alcohol consumption and the risk of mild cognitive impairment (MCI).	Systematic study search of multiple literature	Literature review	The study found controversy in the relationship between alcohol intake and MCI to provide high-quality evidence to prevent clinical MCI and dementia.	Level 1 systematic review	The original studies have different units of alcohol intake such as infrequently. The DRMA is limited by insufficiently reporting some important details such as type of alcohol, amount, and	Yes, study promotes the measurement of alcohol intake, as plan to perform the DRMA base on the alcohol intake measured by amount

						duration of intake. Lastly, original studies mainly rely on the self-report questionnaire to assess alcohol intake.	was implemented.
Article 11 Maintenance of Abstinence in Self-Help Groups, *Alcohol and Alcoholism* (Nalpas et al., 2017)	To study abstinence rates 12 months post alcohol cessation in a sample of French subjects participating in support group meetings.	A total 145 participants sample size of 145 participants	Self reported questionnaire review	Result indicated relapse rates did not vary by gender, withdrawal method, and previous stays in a recovery unit or time of first contact with the self-help association. However, participants attendance of group meetings had a significantly effect in	Level 6: Descriptive	The uncertainty about the notion of relapse and its duration overtime.	Yes. Study is able to identify craving as a prognostic factor for repeated relapse

				lowering abstinence rate.			
Article 12 Cognitive training as a component of treatment of alcohol use disorder: a review (Nixon & Lewis, 2019).	Purpose of the study is to promote Cognitive training as an effective means of improving performance in a range of populations to see if it promotes cognitive recovery and long-term outcomes among those with AUDs	Large literature of 4,200 cognitive training study	Literature review	Findings show that abstinence improve cognition but training protocols may enhance performance and generalize benefit to untrained, but highly similar, tasks. Suggests implementation of conceptual framework	Level 1: systematic review	Noted in both potential and challenges facing the application of cognitive training interventions in those with AUDs. Also lack of functional measures to gauge cognitive improvement.	Yes, study emphasized the promotion of exercise in AUD population as an association with cognitive benefits and functional benefits

Appendix B

Literature Leveling Matrix II

Article Title, Author, etc. (Current APA Format)	**Study Purpose**	**Sample (Characteristics of the Sample: Demographics, etc.)**	**Methods**	**Study Results**	**Level of Evidence (Use Melnyk Framework)**	**Study Limitations**	**Would Use as Evidence to Support a Change? (Yes or No) Provide**

							Rationale
Article 1 Privacy of clinical research subjects: An integrative literature review (Nurmi et al., 2018).	Purpose is to study the complexity of regulation and ethics-related tensions between soil benefits and privacy	Sample of 16 reviewed literature	Literature review	Findings reveal that privacy of human subjects and confidentiality of their personal data is one of the central ethical aspects of clinical research, due to the increased use of electronic health data in clinical research	Level IV	The limitations of this integrative review were related to the search strategy and the quality of the works examined. Varied study quality and limited understanding of the regulation and legal framework related to privacy and its implementation	Yes, it promotes collaboration and involvement of many stakeholders as prerequisite for protecting study subjects' privacy in clinical research.
Article 2 Cognitive rehabilitation in addictive disorders. *Indian journal of psychiatry* (Rajeswaran & Bennett, 2018),	The aim of the study is to explore the recurring association of AUD with neuropsychological deficits.	No statistical sample size provided in the study	Journal article	Findings indicated the positive impact of AUD on cognitive health of victims and how reduction of cognitive deficits has a positive impact on patients with	Level VI: single descriptive study	Limitation to this study is absence of sample size, which makes the study almost non generalizable.	Yes. Study was able to postulate positive changes seen from the adoption of cognitive rehabilitation

				addictive disorders.			program among those with ARCI with noteworthy improvement noted on focused attention, verbal working memory, verbal learning and memory, response inhibition, visuo-spatial construction and visual memory.
Article 3 The future of translational research on alcohol use disorder. *Addiction Biology* (Ray et al., 2021).	The study was proposed to primarily summarize and publicize proposals for the future of translational research in alcohol use disorder.	A scientific meeting involving no human subjects	Literature review	Findings generated knowledge of individuals with high knowledge on how to belter navigate the path of translating research findings on AUD into	Level V: Systematic reviews of descriptive and qualitative studies	Lack of current investment in translating research findings for AUDs into evidence-based clinical practice. Could not be generalizab	Yes, evidence discovered by authors could be used to promote huge change within the clinical practice by adopting the

				effective, safe, evidence-based clinical practice		le due to no sample size to work with	identifying their series of recommendations for advancing translational research in AUD treatment
	To assess adults with normal cognition or mild cognitive impairment and AUD with behavioral and emotional interventions to treat AUD more effective than the usual care or no intervention in reducing the risk of cognitive decline and/or dementia.	No sample	Literature review	The study's finding portrayed that Interventions aimed at reducing alcohol consumption compared to no intervention for reducing risk of cognitive decline and/or dementia was innovative	Level 1: Systematic review	Study reveals limitations in the areas of assumed risk in the comparison group and the relative effect of the mediation	Yes. Study presents interventions aim at reducing excessive alcohol consumption that could possibly lead to dementia and/or cognitive performance as outcomes

Article 4 Effect of alcohol intake on the development of mild cognitive impairment into dementia. (Yao et al., 2020).	This is to evaluate the dose–response relationship between alcohol consumption and the progression of MCI to dementia.	Sample size	Literature review	Study findings prove that the study gaps can be filled in order to prevent dementia and provide a reference for national policies on alcohol.	Level 1: Systematic review and meta-analysis	Study limitations reflect different units of alcohol consumption that will make data integration difficult. Self reported questionnaires generated measurable bias	Yes. Study shows possibility of regulating alcohol usage based on the scientific and published method
Article 5 Treatment gap, help-seeking, stigma and magnitude of alcohol use disorder in rural ethiopia. *Subs*	The purpose of this study was to analyse the extent of the treatment gap of AUD help-seeking behavior, stigma and	1,500 adult sample size	Literature review	Study findings stated individuals with AUD had higher rate of disability and depression. Study also found the treatment gap to be very wide with 87.0% who had	Level 4: Cross-sectional study	The self-report questionnaires provided in an interview-format may be subject to social interest and recall bias, which could potentially influence prevalence	Yes. Study is generalizable because merging will make the series user-friendly and possibly reduce barriers related to cost, cited as a

tance Abuse Treatment, Prevention and Policy, 14(1), 4-4. https://doi.org/10.1186/s13011-019-0192-7 (Sewdu et al., 2019)	barriers to care among people with alcohol use disorder in rural Ethiopia.			had never sought help for their alcohol problems and 70.0% stated high suppressed stigma. Major barriers to seeking help were found among those who wanted to handle the problem on their own, and unsure about where to go for help.		estimates. The AUDIT screening tool used for clinical diagnosis would have been preferable but was not practicable for a population level study. The reverse causality between AUDs and depressive symptoms, disability and other stressful life events cannot be ruled out because of the cross sectional study design. Help seeking behavior was determined among a very small sample size	barrier to seeking help. Interventions for the reduction of both internalized and experienced stigma are also likely to be vital to promote the uptake of services. Evidence-based population level interventions, including the introduction of regulations for availability of alcohol (including locally made beverages) in the market and

						with high levels of AUD; this may affect the generalizability of the study result.	alcohol advertising may be helpful to reduce the high prevalence of the disorder.

Appendix C

Literature Leveling Matrix III

Title	Intext	Country	Study type	Intervention of interest	Themes/Outcomes	Unexpected findings
Article 1 The course of cognitive performance during inpatient treatment in patients with alcohol use disorder with no, mild or major neurocognitive disorders.	Bruijnen et al, (2020)	Netherland	Cross-sectional study	To assess how mild to moderate cognitive impairment in substance use disorder predict treatment outcome with focus on the prevalence of and differences in cognitive functioning across AUD by the use of cognitive screening at the early stage of	The study calls for detection of cognitive impairment at an early stage of treatment as vital to determine the course of treatment and to maximize treatment	The study found inconsistent treatment management among patients suffering from ARCI, which continue to excalate the issue of under-recognition, diagnosis and treatment.

				addiction disorders		
Article 2 A systematic review of treatments for alcohol-related cognitive impairment: lessons from the past and gaps for future interventions.	Caballeria et al., (2020)	Madrid, Spain	Systematic study	To review and investigate existing evidence concerning both cognitive and pharmacological interventions for ARCI. A total of 804 articles were collated.	Yes, a strong study that systematically reviewed past treatments for ARCI as well as reviewed the study gaps for future interventions	Alcohol-related cognitive impairment (ARCI) is highly prevalent among patients with alcohol dependence. Although it negatively influences treatment outcome, this condition is underdiagnosed and undertreated.
Article 3 Rethinking alcohol interventions in health	Glass et al., (2017)	Sweden	Qualitative obervational study	The study intervention is geared towards how AUD treatment and	The study result shows mediation networking on	The unexpected findings reveal how limitations to exploring the management and

care: A thematic meeting of the international network on brief interventions for alcohol & other drugs (INEBRIA).				execution need to change as it provides multiple evidence-based Tx options in the general care setting	assessment of screening and brief intervention as effective Tx plan for those with AUD by addressing the evidence gaps in screening, developing innovations to address AUD as well as tackle stigma and identify need to improve the capacity for AUD care worldwide	treatment of AUDs within the healthcare settings has hindered effective and safe treatment for those with AUD.

Article 4 The future of translational research on alcohol use disorder.	Ray et al., (2021)	United States of America	System atic review of a descript ive study	The study was proposed to primarily summarize and publicize proposals for the future of translational research in alcohol use disorder	The theme of the study was to generated knowledge of individuals with high knowledge on how to belter navigate the path of translating research findings on AUD into effective, safe, evidence-based clinical practice	The unexpected findings of this study was the major gap between the translation of AUD research findings into the clinical practices.

Article 5 Treatment gap, help-seeking, stigma and magnitude of alcohol use disorder in rural ethiopia. *Substance Abuse Treatment, Prevention and Policy, 14*(1), 4-4. https://doi.org/10.1186/s13011-019-0192-7	Zewdu, et al., (2019).	Ethiopia	Cross-sectional study	The aim of this study was to assess the magnitude of the treatment gap for alcohol use disorder, help-seeking behavior, stigma and barriers to care among people with alcohol use disorder in rural Ethiopia.	Interventions to reduce stigma and enhance community awareness are recommended.	The study unexpectedly found a very wide treatment gap was of about 87.0% (only 13% sought help) of participants with an AUDIT score ≥ 16 had never sought help for their alcohol problems and 70.0% reported high internalized stigma. Major barriers to seeking help were wanted to handle the problem on their own, believing that it would get better by itself and being unsure about where

						to go. Stigma and low awareness may be major barriers to help-seeking.

Appendix D

CITI Training Certificate and Permission/IRB-Approval Letter

CITI PROGRAM

Completion Date 14-Oct-2021
Expiration Date 13-Oct-2024
Record ID 23033244

This is to certify that:

Motunrayo Ayodeji

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Biomedical Research - Basic/Refresher
(Curriculum Group)
Biomedical & Health Science Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Liberty University

CITI
Collaborative Institutional Training Initiative

Appendix E

Institutional Review Board (IRB) Letter of Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

December 22, 2021

Motunrayo Ayodeji
Folashade Odedina
Re: IRB Application - IRB-FY21-22-547 Addressing mild to moderate memory impairment among adults (18-44 years old) with alcohol use disorder and dependence through restorative rehabilitation combined with comprehensive, evidence-based medical detoxification treatment: integrative review

Dear Motunrayo Ayodeji and Folashade Odedina,
The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your project with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research for the following reason:
(1) It will not involve the collection of identifiable, private information from or about living individuals (45 CFR 46.102).

Please note that this decision only applies to your current application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

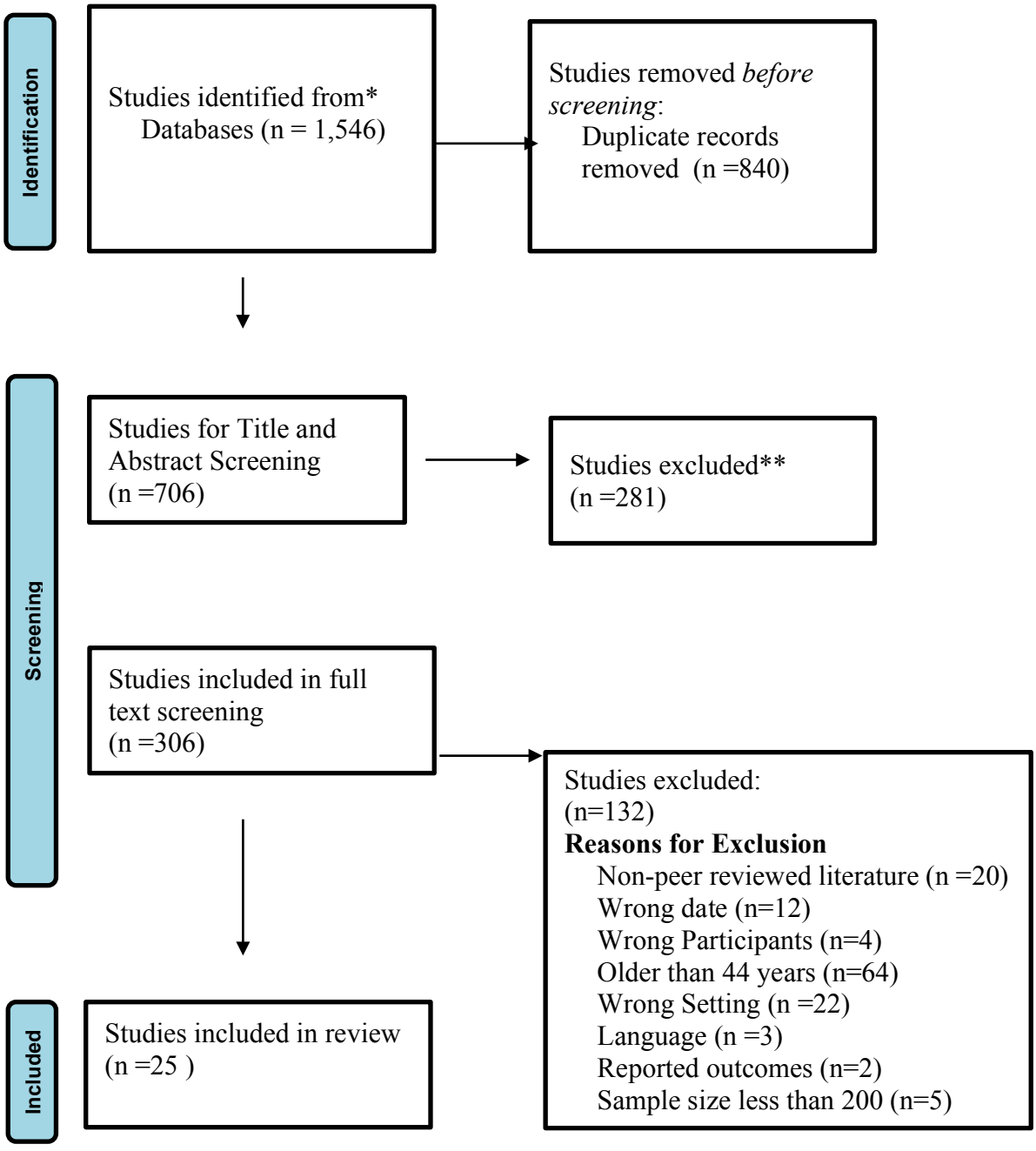
Also, although you are welcome to use our recruitment and consent templates, you are not required to do so. If you choose to use our documents, please replace the word *research* with the word *project* throughout both documents.

If you have any questions about this determination or need assistance in determining whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

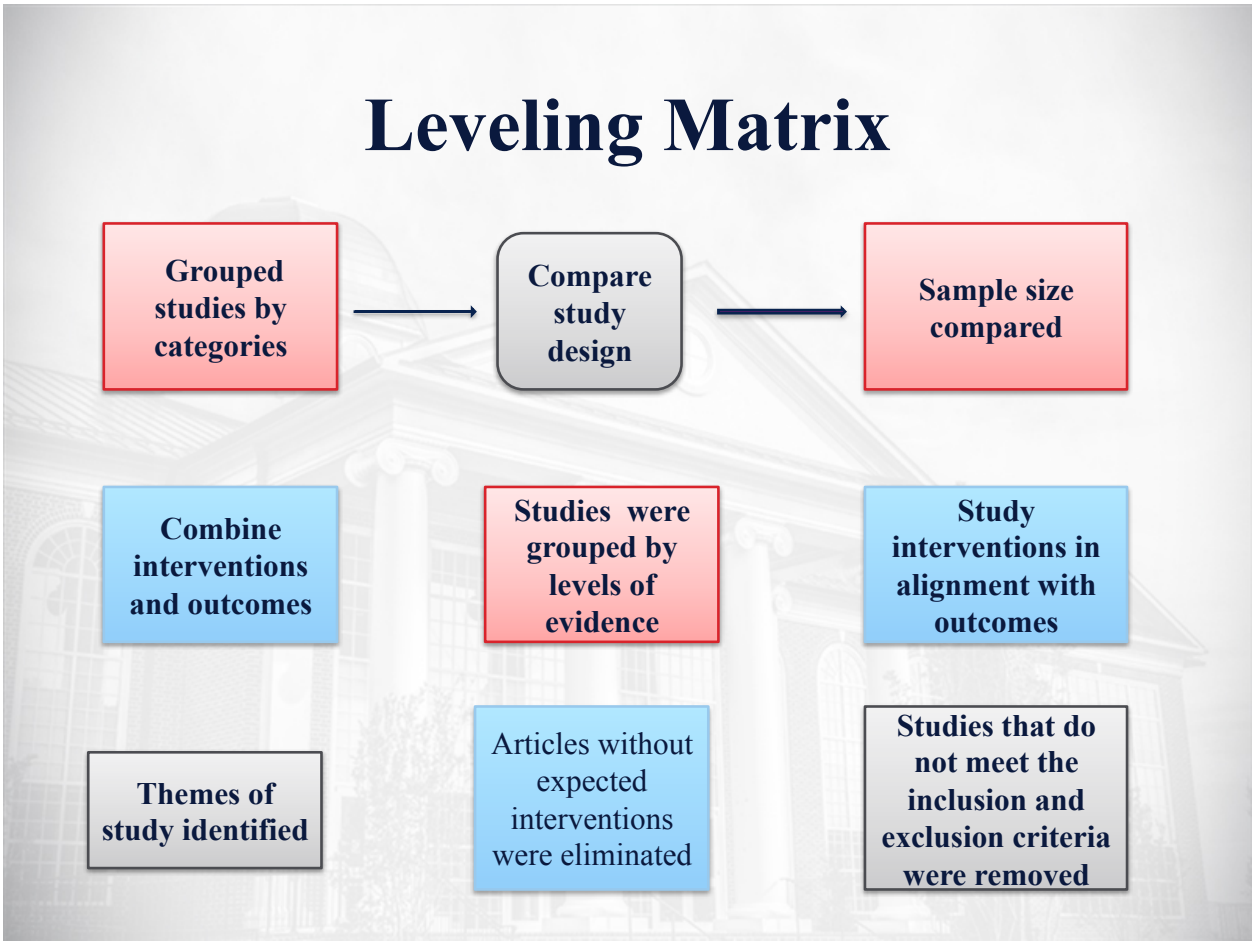
Appendix F

FIGURES 1: PRISMA FLOW DIAGRAM



PRISMA Flow Diagram for Mild to moderate Memory Impairment Related to AUD Among Young Adults

Appendix G


Leveling Matrix
Grouped studies by categories
Compare study design
Sample size compared
Combine interventions and outcomes
Studies were grouped by levels of evidence
Study interventions in alignment with outcomes
Themes of study identified
Articles without expected interventions were eliminated
Studies that do not meet the inclusion and exclusion criteria were removed

Appendix H

Table 1: AUD Risk Factors

AUD Internal Risk Factors	AUD External Risk factors
Genetics	Family
Psychological conditions	Environmental factors
Personality	Religion
Personal choices	Social and cultural norms
Drinking history	Age
Men: more than 15 drinks/week	Education
Women: more than 12 drinks/week	Job status
Binge drinking: men 5 or more and women4 or more drinks within 2 hours period	(Addiction Center, 2022)

Appendix I

Table 2: Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Peer review publication within the past 5 years (2017-2022)	Publications prior 2017
English language	Foreign language
Studies addressing mild to moderate cognitive impairment	Severe cognitive impairment
Young adults ages 18-44 years old	Geriatrics with AUD
Both male and female gender	Literatures with small sample size
Individuals with diagnosis of AUD that meet the DSM-V criteria	All non alcoholic drinkers
History of alcohol related cognitive impairment (ARCI)	

Appendix J

Table 3: Summary of recommendations and Associated Objective For Translational Research in Alcohol Use Disorder (AUD)

Recommendation	Objective
1. Refine language for basic and clinical phenotypes	Bridge key constructs in alcohol research to facilitate translational research.
2. Biomarker development	Develop translatable, scalable biomarkers for pharmacotherapy and psychotherapy AUD treatments.
3. Conduct large-scale longitudinal studies	Link neurobiological substrates to clinically relevant outcomes.
4. Conduct generalizable clinical research	Develop and refine clinical methods that increase external validity for AUD treatment.
5. Leverage resources	Increase awareness in resources available to improve medication development.
6. Support translational and team-based training	Promote scientific exchange between scientists across the translational spectrum and encourage team-based science.
7. Close the treatment gap	Use currently available resources to benefit individuals with AUD.
8. Fill the evidence-based practice knowledge gap	Improve communication between scientists and the public regarding evidence-based prevention and treatment strategies.