Title
Preliminary Efficacy of a Nurse Led Brief Intervention Quasi-Experimental Pilot Study for Individuals Presenting to the Emergency Department with Risk for Alcohol Use Disorder

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Author
Gutierrez, Felipe

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Preliminary Efficacy of a Nurse Led Brief Intervention Quasi-Experimental Pilot Study for Individuals Presenting to the Emergency Department with Risk for Alcohol Use Disorder

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy in Nursing

by

Felipe Gutierrez

2020
ABSTRACT OF THE DISSERTATION

Preliminary Efficacy of a Nurse Led Brief Intervention Quasi-Experimental Pilot Study for Individuals Presenting to the Emergency Department with Risk for Alcohol Use Disorder

by

Felipe Gutierrez

Doctor of Philosophy in Nursing
University of California, Los Angeles, 2020
Professor Eunice Eunkyung Lee, Chair

Purpose. The purpose of this study was to assess preliminary efficacy of screening for alcohol use and brief interventions (BIs) on patients who present to the emergency department (ED) at-risk for alcohol use disorder (AUD) utilizing established nurse navigators. This is the first study to assess the initial efficacy of a BI to reduce alcohol use in at-risk patients utilizing nurse navigators in the ED who were not bedside nurses.

Theoretical Framework. The theoretical framework guiding this study is based on the Health Belief Model (HBM) and the Transtheoretical Model and is the first study to assess the HBM constructs for patients with AUD in the ED.

Methods. A pilot, non-equivalent, two-group quasi-experimental study assessed the preliminary effectiveness of a registered nurse-led BI to reduce alcohol consumption and dependency, improve readiness to change alcohol use, lower depressive symptoms, decrease perceived
barriers, and improve the perceived susceptibility, seriousness, and benefits among individuals presenting to the ED who were at-risk for AUD. Two groups were enrolled: an intervention group and a usual-care comparison group.

**Results.** At 3-month follow-up, the intervention group had a significant decrease in standard drinks on a typical day and the construct of perceived seriousness was significantly higher in the intervention group than in the comparison group. Within groups significance was found at the 3-month follow-up for both the intervention and comparison groups for most outcome variables. The Patient Health Questionnaire (PHQ-9) scores for depression were significantly greater at baseline for participants who did not return for follow-up.

**Conclusion.** This pilot study examined the feasibility of a nurse navigator-administered BI in the ED for patients at-risk for AUD and may be beneficial for future randomized control trials to assess the efficacy of a nurse navigator-led BI in the ED.

**Implications.** Nurses should be screening patients on admission for alcohol use based on current evidenced-based practice tools. They should be planning interventions with their patients at risk for alcohol use disorder. They should be assisting with referrals to treatment in the community and offering options to the patient who is ready to change their alcohol use. Electronic health records can be utilized to alert nurse navigators for consult to provide the BI and refer patients to treatment.
The dissertation of Felipe Gutierrez is approved.

Mary-Lynn Brecht

Mary Sue V. Heilemann

Lillian Gelberg

Eunice Eunkyung Lee, Committee Chair

University of California, Los Angeles

2020
Dedication

This dissertation is dedicated to my husband, Jeffrey, who has stood by me and supported all my efforts while working full time and attending nursing school and graduate school. He has been my support through all my educational endeavors. This year is our 25th anniversary; what a way to celebrate! To my family who has encouraged me to keep the faith and to keep my eye on the prize. To my friend, Josie, who has spent many hours sharing her wisdom and knowledge and has shown me the true meaning of friendship. Lastly, to all the participants who bravely shared their struggles with alcohol use and who trusted me to share these results with the world. They have contributed to the body of nursing knowledge and are the heroes in this study.
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<tr>
<td>AUD</td>
<td>Alcohol Use Disorder</td>
</tr>
<tr>
<td>SBIRT</td>
<td>Screening, Brief Intervention, Referral to Treatments</td>
</tr>
<tr>
<td>BI</td>
<td>Brief Intervention</td>
</tr>
<tr>
<td>ED</td>
<td>Emergency Room</td>
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<tr>
<td>HBMI-R</td>
<td>Health Belief Model Instrument – Revised</td>
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<td>AUDIT-C</td>
<td>Alcohol Use Disorder Identification Test Consumption</td>
</tr>
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<td>PHQ-2 and 9</td>
<td>Patient Health Questionnaire – 2 and 9</td>
</tr>
<tr>
<td>TTM</td>
<td>Transtheoretical Model</td>
</tr>
<tr>
<td>RN</td>
<td>Registered Nurse</td>
</tr>
<tr>
<td>T1</td>
<td>Time 1</td>
</tr>
<tr>
<td>T2</td>
<td>Time 2</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Drink</td>
</tr>
<tr>
<td>NIAAA</td>
<td>National Institute on Alcohol Abuse and Alcoholism</td>
</tr>
<tr>
<td>IRB</td>
<td>Institutional Review Board</td>
</tr>
<tr>
<td>PI</td>
<td>Principal Investigator</td>
</tr>
<tr>
<td>CAB</td>
<td>Community Advisory Board</td>
</tr>
<tr>
<td>FLOW</td>
<td>Feedback, Listen, Understand, Explain, Option, Avoid Warning</td>
</tr>
<tr>
<td>NIAAA</td>
<td>National Institute of Alcohol Abuse and Alcoholism</td>
</tr>
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Acknowledgments

I would like to express my gratitude to Professor Eunice Lee who stepped in as my committee chair when my first chair stepped down. Dr. Lee has supported me through the program and has been available to encourage me to continue with my study. She has mentored me as a professor in class and all the way through completion of my degree. To Dr. Mary Sue Heilemann and Dr. Mary-Lynn Brecht for mentoring me through the program, for their encouragement, and for providing me the tools necessary to succeed. To Dr. Lilian Gelberg for agreeing to be on my committee and being the expert on substance use disorder.
Vita/Biographical Sketch

Advanced Practice Nurse Expert

- Coordination and facilitation of staff annual skills
- Problem solver for Sepsis in the Emergency Department, initiation of order sets, building a team of experts, and writing standard work using A3 concepts.
- Member of the Workplace Violence Committee engaged in education for new initiative to screen patients for violent risk and call a code BURT for patients with violent tendencies.
- Organize and attend patient care conferences on patients who are difficult to place or with behavioral management issues.
- Engaged in upskilling of staff as needed to ensure best practices at the bedside
- Member of the Pharmacy and Therapeutics Committee, responsible for ensuring nursing representation
- Crisis Prevention Instructor for staff who work in areas where risk for violence is high, techniques and tools provided to increase use of preventative measures and decrease violence.
- Mentor for staff who are interested in writing abstracts for conferences, wanting to go back to school, or who are interested in research and publication.

Restraint Expert APN

- Conduct teaching rounds for nurses based on best practice, Joint Commission, and Centers for Medicare and Medicaid Standards
- Provide expert advice for nursing leadership system wide
- Developed check lists, order sets and documentation tools for units to care for patients in restraints system wide
- Performance Improvement based on data abstraction and analysis
- Poster Presentation: Restraint Reduction As A Result of Bedside Restraint Teaching Rounds
- Poster Presentation: Bridle Use: Decrease in Restraint Use, Nursing Cost, X-Ray Exposure

Alcohol Use Disorder/Opioid Use Disorder Expert APN

- Organized SBIRT conference for Scripps employees caring for patients with substance use disorder
- Conduct teaching rounds for nurses and physicians focused on best practice and developed a treatment algorithm.
- Assisted in development of order sets using evidenced based screening tools and documentation tools for units to care for patients with Alcohol Withdrawal and opioid withdrawal system wide
- Performance Improvement based on data abstraction and analysis
- Assisted with implementation of substance abuse nurse system wide
- Poster Presentation: Descriptive Exploratory Retrospective Study of Alcohol Withdrawal Protocol and Restraint Use in Hospitalized Patients
- Podium Presentation: Acute Alcohol Withdrawal Prevention & Management: A Prospective Study
- Academy of Medical Surgical Nurses CeCe Grindel Evidence-Based Practice Grant for prospective review of alcohol withdrawal protocol study
Evidenced Based Practice Institute San Diego Consortium – Mentor

- Podium and Publication: Identifying and Eliminating Nursing Practice Barriers Within An Existing Evidenced Based, Multidisciplinary Inpatient Fall Prevention Protocol
- Poster Presentation: Identifying And Eliminating Key Data Loss During Shift Hand-off
- Podium Presentation: Breaking Down Barriers to Bedside Shift Report: Making Change Stick by Including Feedback from Frontline Staff

Scripps Silver Health Quality Awards 2013

- Acute Alcohol Prevention & Management: A Systematic Approach
- Care Management Redesign

Lecturer and Clinical Instructor

- Classroom instruction in concepts, process, and practices of fundamentals of nursing theory and nursing lab skills
- Evaluated student using quizzes, exams and use of the nursing process
- Provided hands on instruction and guidance for RN students at various clinical sites

License/Certificates

- Registered Nurse
- Family Nurse Practitioner
- BLS/ACLS
- Certified Medical Surgical RN #2662615 Exp 10/31/2030
- Crisis Prevention Institute Instructor (CPI) #810176

Education

- Master of Science in Nursing, FNP University of San Diego
- Bachelor of Science in Nursing, University of San Diego
- Associates of Science in Nursing, San Diego City College
Chapter 1: Introduction

Rational for Utilization of a Nurse Navigator

The International Nurses Society on Addiction stands firm in the belief that nurses can help improve the lives and well-being of those affected by substance use (Clancy & Fornili, 2019). The Emergency Nurses Association (2008) proposed that nurses utilize Screening, Brief Intervention, Referral to Treatments (SBIRT) for AUD patients and that outcome measures related to nurse-led SBIRT be reviewed. The literature has not suggested the use of nurse navigators for interventions with AUD patients in the ED. This study utilized the HBM and Transtheoretical model to form the basis of the study.

The nurse navigator. The navigator program was developed in 1990 by Freeman to assist cancer patients as they navigated their way through a complex health care system. The navigator program was started in Harlem, NY with a disproportionate vulnerable population of poor needing assistance to eliminate barriers to care from the time of diagnosis to timely treatment for cancer (Freeman, 2012). Freeman, Muth, and Kerner (1995) reported that blacks had the highest rates of cancer and were being diagnosed at later stages and had a greater probability of dying from cancer. In their study 1034 females and 102 males were screened for cancer from 1990 to 1992. Nurse navigators were used to follow-up with the study participants, of those patients that were seen by a nurse navigator, 87.5% completed recommended breast biopsies compared with 56.6% of those that were not seen by a navigator. In addition, patients with nurse navigators had a biopsy sooner than those without a navigator. This was a historical paper outlining early findings and breakthrough use of the nurse navigator with the vulnerable population. In a concept paper summarizing the literature that describes who the navigator is, Pedersen and Hack (2010) characterized the navigator as either coordinator of care or provider of
support along the individual’s illness trajectory. The researchers list five critical characteristics a navigator must possess. These included access to care, skills in speaking and listening, knowledge of health care systems and resources, patient advocacy, and provider of information and education. Additional characteristics frequently mentioned in the literature included elimination of barriers to care, addressing financial concerns, locating and using an interpreter to address cultural incompetence, assisting the individual to access the health care system network, providing transportation, and dispelling fears regarding the individuals diagnosis. In addition, the navigator was described as a single point of contact, familiar with the patient, connecting that person to needed community resources and other services from the time they are identified as ill until they complete their treatment regimen.

**Cost savings.** The literature supports the use of a nurse navigator trained in the triage of patients’ physical and psychological needs. Such nurses possess leadership, assessment, and health promotion skills (Pedersen & Hack, 2010). A cluster randomized control trial was led by Wagner et al. (2014) at eleven Seattle clinics with 109 primary care physicians. The sample size of N = 250 were diagnosed with cancer, and all were provided interventions over a 4-month period, by three-trained nurse navigators who applied the Institute of Medicine’s model for the delivery of psychosocial health services. More women 89% than men were enrolled in the study with a mean age of 62 years, Caucasians 82%, and college grads 53%. The average number of nurse navigator visits per patient was 18. Findings revealed that cumulative costs for care of a patient with lung cancer followed by a nurse navigator were $6,852 less than the control group at 12-month follow-up.

Phillips et al. (2019) reviewed claims data from Medicare and private pay patients (N=2805) undergoing total hip and knee arthroplasty among 31 surgeons and 16 different
hospitals pre and post a nurse navigator program. The mean age of the patients was 72 years, female 63%, and Caucasian 72%. The program was developed to guide discharge disposition and home needs for patients after surgery. The navigators were trained on expected recovery and rehabilitation, risk factors. The navigators contacted the patients at home post-surgery up to 10 days and as needed after that. Results reported a $1575 per Medicare patient cost reduction and $1819 for private pay. The navigator program over a one-year period saved the institution $5,556,600 and it was estimated that the annual savings was almost 19 times the cost of the program. With the high cost of caring for patients with AUD nationally and in California, a navigator program for patient with AUD in the (Emergency Department) ED may be beneficial for the hospital and society in general.

Coordinator of care. To determine if patient navigation affects the individual’s perceptions of overall preparation for care, Campbell, Craig, Eggert, and Bailey-Dorton (2010) conducted a mail survey of 50 individuals served by nurse navigators and another 50 receiving usual care at a comprehensive cancer care clinic. The researchers received 48 out of the 100 surveys, 28 people surveyed reported they received the services of a nurse navigator. When compared to usual care, nurse navigator care resulted in statistical significance for resources within the community, $p = 0.0001$, information given timely, $p = 0.0011$, access to someone to address concerns, $p = 0.0336$, information of eligible financial assistance, $p = 0.0085$, and gaining access to qualified assistance, $p = 0.0075$. Overall, the nurse navigator participants indicated higher rates of agreement than non-navigator participants: satisfaction with care, preparation to start cancer treatment, and understanding and managing its side effects.

Patient acceptability. A prevalence study was led by Broyles, Rosenberger, Hanusa, Kraemer, and Gordon (2012) to assess patient acceptability of a nurse-driven SBIRT in
hospitalized patients and to determine alcohol consumption profiles and certain patient demographic characteristics associated with patient acceptability of an SBIRT intervention. The researchers utilized a convenience sample surveying 370 inpatients at a Veterans Administration Hospital. The sample of men (96%) was between the ages of 51-70 and 75% were Caucasian. Results reported that around 28% of hospitalized patients were identified with AUD. Over 95% reported they were comfortable with a nurse-delivered SBIRT, mean score 32.80 ± 6.38, (range 4 – 40). Patients who perceived that they were able to determine their own alcohol risk were more willing to agree to the nurse-delivery of the SBIRT, $B(2.210), 95\% CI [0.982 – 3.437], p = 0.000$. This was also true for patients who perceived that they had the ability to reduce alcohol-related health risks, $B(2.011), 95\% CI [0.772, 3.249], p = 0.002$. Patients who were older, nonwhite, and had positive Alcohol Use Disorder Identification Test Consumption (AUDIT-C) reported being uncomfortable with nurse-delivered SBIRT.

**Training.** A three-phase pilot study designed by Broyles, Kraemer, Kengor, and Gordon (2013) evaluated an (registered nurse) RN-SBIRT curriculum and a pocket guide. The study was a quasi-experimental design, conducted in a Veterans Affairs (VA) hospital, utilizing two inpatient units, randomized to either receive RN-SBIRT training or self-directed web training. The sample size of 78 RNs was comprised of 32 RNs from the control unit and 46 from the experimental unit. The researchers factored how knowledge, perceptions, and attitudes guide clinical staff in caring for AUD patients effectively. Alcohol related knowledge, brief intervention skills, and coaching were taught, and available resources provided. This undertaking was based on prior studies exposing nurses’ doubt and hesitation in providing SBIRT services to this patient population. An emphasis was placed on how and why SBIRT should be a role of the nurse. The scope of practice of the RN is to assess patient needs and provide interventions based on nursing
diagnosis and plan of care. The researchers recommended addressing role legitimacy in RN-SBIRT delivery to address negative perceptions of the nurse’s role in providing care for patients with AUD, one example was the development of an institutional policy to support nurse initiation of SBIRT.

In a quasi-experimental study, to design, implement, and evaluate an SBIRT training program for RNs on two inpatient medical units, nurses were randomized to either SBIRT or web-based alcohol related training and care (Broyles, Gordon et al., 2013). The study sample included 28 nurses, of whom 93% were female, 75% were White, with a mean age of 38 years, and 7 years of experience. After SBIRT training, there was a significant increase in role adequacy, \( p = .032 \), an increased frequency of performance, \( p = .011 \), and an increased competence in caring for those with AUD, \( p = .001 \) as compared to the web-based training. These curriculums were accepted and well liked by the nursing staff whose knowledge and comfort in caring for patients with AUD increased.

**Beliefs and attitudes of nurses.** A two-stage survey was administered to ED nurses to assess their alcohol use and beliefs (Freeman, Roche, Williamson, & Pidd, 2011). The first survey assessed the nurses underlying beliefs regarding inquiring about alcohol use, assisting individuals to manage alcohol intake, role adequacy, legitimacy, workload, autonomy, and support. The second survey measured frequency, questioning individuals about their alcohol use and how to manage their consumption. The study surveyed 71 ED nurses with median ED experience of 5 years, 86% were female with a mean age of 37.02 years \( \sigma (10.00) \).

Results indicated that on average, using a scale from 1 (low) to 5 (high), RN’s typically did not feel their role was to assist patients to manage their alcohol use (3.00), \( \sigma(0.73) \), range (1.00 – 4.50) and role adequacy i.e., to assess alcohol use or intervene (2.74), \( \sigma (0.87) \), range
(1.00 – 5.00). The RN’s reported that building a trusting relationship was a necessary building block, for assessment of alcohol use in order to not offend the patient who may be sensitive to their AUD. The RN’s (74%) reported that the pace of the ED was a barrier in their ability to provide interventions related to alcohol use. During brief intervention, most RN’s were comfortable with advising the patient in discussion of health consequences of alcohol (68%) and alcohol consumption (79%) (Freeman et al., 2011).

A great number of patients could benefit from an RN intervention; the RN must be encouraged and supported in this role (Freeman et al., 2011). Substance abuse centers are not equipped to train a larger workforce, and the current health care workforce lacks professionals trained in addiction medicine (Ghitza & Tai, 2014). Without standardized policies that address education, training, and mentorship movement forward in responsible fashion with this critical issue will be impossible.

**Background of the Problem**

Alcohol use disorder (AUD) is a serious problem that affects both men and women in the United States. Although AUD is recognized as alcohol dependence, abuse, and alcoholism, the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013) integrated the disorders into one, namely AUD. Persons with AUD spend a significant period of their life drinking, thinking about alcohol, ensuring that they can get alcohol, and/or recovering from its effects, often at the expense of other activities and responsibilities. Alcohol consumption is distressful not only for the individual but also for family and close friends. Those who suffer from AUD may not fulfill responsibilities at home, work, or school. They also may put themselves in dangerous situations, such as driving under the influence of alcohol. The decision to get behind the wheel of a car can have legal or social
consequences (e.g., arrested for driving under the influence) or worse, injuring themselves or others. Furthermore, alcohol may be used to alleviate unwanted effects of other substances such as cannabis, cocaine, heroin, and anxiolytics (American Psychiatric Association, 2013).

The Features of AUD

AUD is described as a cluster of symptoms that affect the individual both physically and psychologically American Psychiatric Association, 2013). The presence of two out of 11 symptoms occurring within 12 months is the diagnostic criteria for AUD. These 11 symptoms include: physical withdrawal symptoms such as tachycardia, tremors, insomnia, nausea or vomiting, anxiety, diaphoresis, visual, tactile, or auditory hallucinations, agitation, and seizures. Psychological symptoms include craving alcohol, obsessing over alcohol, drinking in excess over a long period of time, desire to cut down alcohol use with no success, tolerance resulting in a need to consume more alcohol with little change in alcohol’s effects, and an inability to regulate alcohol consumption despite having problems at home, work, school, or socially. Additionally, a symptomatic individual will often continue to drink despite injury and or physical and psychological illness. Two or three symptoms indicate a mild form of the disease, while four or five indicate a moderate form, and six or more, a severe form (American Psychiatric Association, 2013).

Standard Drink

A standard drink (SD) is defined as 14 grams of pure alcohol – equivalent to a 12-ounce regular beer containing 5% alcohol, a 5-ounce glass of wine containing 12% alcohol, and 1.5 ounces of distilled spirits containing 40% alcohol (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2015a).
At Risk for AUD Drinking

Drinking that may place an individual at risk for AUD and health consequences are defined by the following.

**Daily and weekly limits.** For men at risk drinking is defined as more than 4 SD on any single day, and more than 14 SD per week. For women and for persons greater than or equal to 65 years of age, regardless of gender, at risk drinking is defined as more than 3 SD on any single day, and more than seven SD per week in the past 30 days (NIAAA, 2019). For persons younger than 21 and those who may be pregnant any amount of alcohol consumed is diagnostic for at risk drinking (NIAAA, 2020).

**Binge drinking.** Additionally, binge drinking places an individual at risk for AUD, for men it is recognized as having 5 or more SD and for a female as having 4 or more SD, in a two-hour period, bringing blood alcohol concentration (BAC) levels to the limit of 0.08 g/dl or above in the past 30 days (NIAAA, 2020).

**Heavy drinking.** Furthermore, heavy drinking places an individual at risk for AUD and is defined for both men and woman as consuming 5 or more SD on the same occasion on each of 5 or more days in the past 30 days (NIAAA, 2020).

The Prevalence of AUD

In 2018, approximately 14.4 million (5.8%) American adults that were 18 years and older had AUD. This included 9.2 million men (7.6%) and 5.3 million women (4.1%; NIAAA 2020). In 2018, the rate of alcohol use for an individual 18 to 25 years of age in the past 30 days was (55.1%) and for those 26 years or older (55.3%). The rate of binge drinking for this same age group on at least 1 day in the past 30 days was 34.9%, and 25.1%, respectively. Additionally, the
rate of heavy drinking on the same occasion on each of 5 or more days was 9.0%, and 6.2%, respectively (Substance Abuse and Mental Health Services Administration [SAMHSA], 2019a).

The 12-month prevalence of alcohol use in the United States among those ages 18 to 25 years from 2017 through 2018 was: Whites (78.8%), Hispanics (68.9%), American Indian/American Native (63.8%), and Blacks (62.3%). For males, the prevalence was lower than for females for those 18 to 25 years of age (72.1% vs. 74.0%, respectively). For binge drinking however, the rate on at least 1 day in the past 30 days was higher for males than for females for those 18 to 25 years of age (35.4% vs. 34.4%). Additionally, the rate of drinking for males was higher than for females for those 26 and older (73.0% vs. 66.2%, respectively). For those 26 and older who admitted to binge drinking, 30.4% were males compared to 20.3% female (SAMHSA, 2019b).

AUD is a disease that is often progressive and fatal, with more than 85,000 deaths per year related to binge or heavy drinking. Fatalities stem from traffic accidents, drownings, and health-related deaths such as cardiovascular diseases (Tetrault & O’Conner, 2018). Those with a propensity toward AUD will likely have been diagnosed by a health care provider or have exhibited symptoms by the age of 30 years (American Psychiatric Association, 2013). Data from the Centers for Disease Control and Prevention (CDC, 2016) indicated that over 80,000 deaths were related to excessive alcohol use from 2006-2010. In 2016, over 10,000 individuals died in alcohol-related crashes in the United States, the District of Columbia, and Puerto Rico. Furthermore, California lost 1,059 lives to alcohol-related crashes, second only to Texas. Strikingly, 29% were driving with BAC impaired levels of 0.08 or higher (National Highway Traffic Safety Administration [NHTSA], 2017).
The Financial Impact of AUD

AUD costs $235 billion annually in increased health expenditures, crime, and lost productivity (National Institute on Drug Abuse [NIDA], 2015). Alcohol-related health care expenditures alone cost $30 billion a year (NIDA, 2015). These costs include the impact of heavy drinking over a long period of time resulting in significant long-term economic effects. These long-term effects contributed to over 200 diseases and health problems including liver cirrhosis deaths, of which 47.8% were related to alcohol in individuals 12 years and older in 2015. In addition, drinking alcohol increased the risk for cancers of the throat, mouth, voice box, liver, and breast. Furthermore, injuries that led to disabilities and deaths from heavy drinking was the fifth leading risk factor among individuals 15-49 years of age (NIAAA, 2020).

Motor vehicle crashes with alcohol-impaired drivers cost $44 billion in 2010; these costs were associated with lost productivity, and legal, medical, and property damage (NHTSA, 2017). In a cost analysis, of various studies for both state and national data related to risky drinking above the NIAAA recommendations, Sacks, Gonzales, Bouchery, Tomedi, and Brewer (2015) reported costs for both heavy and binge drinking in the United States in 2010 were $249 billion, equaling to $2.05 per drink, or $807 per person and binge drinking alone cost $191 billion (76.7%) of total cost.

As individuals may be unaware that they are at risk for AUD or they may not be seeking assistance for AUD, models have been investigated that might counteract these high costs and provide greater awareness of such individuals that place them at risk for poor health care outcomes and injuries. One such model is the Screening, Brief Intervention, and Referral to Treatment (SBIRT) intervention, designed for health care personnel to use as a tool for standard practice with individuals at risk for AUD. The model assists staff in detecting risky or hazardous
alcohol use, and in providing early intervention and referral for treatment to individuals that consume alcohol above the NIAAA recommended guidelines.

**Screening, Brief Intervention and Referral to Treatment (SBIRT)**

SBIRT for individuals at risk for AUD is part of an evidenced-based compressive model that has been shown to be effective in decreasing alcohol consumption in multiple studies (Akin, Johnson, Seale & Kuperminc, 2015). SBIRT is an intervention for patients with, or at risk of developing, AUD. Patients can be screened by any health professional, be provided an early intervention, and a referral for treatment (Babor, Del Boca, & Bray, 2017). In a cost-benefit analysis of SBIRT, SAMHSA (n.d.a) reported that SBIRT was shown to be a good investment as cost savings were upwards of $3.81 to $5.60 for every dollar spent. More specifically, emergency visits decreased by as much as 20%, and there were fewer non-fatal injuries, hospitalizations, and vehicular accidents at 6 and 12-month follow-up for the SBIRT intervention group as compared to a control group.

In a study assessing costs and outcomes using monetary and nonmonetary measures, i.e. drinking and quality of life, SBIRT delivery and outcomes in the emergency department (ED) were compared to delivery in outpatient primary care settings at baseline and 6 months follow-up. Findings indicated that on average, it was less expensive to provide SBIRT to patients in the ED than in the outpatient setting, and there was a greater probability for a successful outcome (e.g., reduction of alcohol consumption, improved quality of life) in the ED than in the outpatient setting (Barbosa, Cowell, Bray, & Aldridge, 2015). Reports from the Alcohol Research Group’s 2000 to 2015 National Alcohol Surveys revealed a significant upward trend in alcohol-related injuries when respondents reported a greater number of drinks and a greater number of hours
being exposed to higher levels of blood alcohol more than or equal to 0.05 (Cherpitel, Ye, & Kerr, 2018).

While some would argue AUD is a behavioral problem, the experts in the field of substance use makes it clear that AUD is a disease; therefore, those at risk or with AUD should be treated like any other person with a chronic disease (American Psychiatric Association, 2013). Because nurses are the first professional health care providers that patients encounter, the nurse could be an appropriate staff to conduct SBIRT.

**The Nurse Navigators**

Nurse Navigators are specialists in coordinating care for patients vulnerable for readmission. They assist in removing barriers to care by navigating complicated insurance issues, providing information about community resources, and ease access for patients to primary care (Pautasso, Zelmanowicz, Flores, & Caregnato, 2018).

Patients at risk for AUD are considered a vulnerable population; some are poor, homeless, or have mental illness, making it difficult to access programs for recovery. The Affordable Care Act has provided the means to gain access to health care for those with AUD; however, once diagnosed, access to a program that will assist in their recovery may be so complex (e.g., affording the care, fear of shame, discrimination) that it may lead to relapse (SAMHSA, 2016).

The navigator program was developed in 1990 by Freeman (2012) to assist cancer patients as they navigated their way through a complex health care system. The navigator program was started in Harlem, NY with a disproportionate vulnerable population of poor needing assistance to eliminate barriers to care from the time of diagnosis to timely treatment for cancer (Freeman, 2012). The navigator in the ED has the potential to assist the poor and
vulnerable patient population at risk or with AUD. Although this study would be the first in which a nurse navigator is used in the ED to provide an intervention for patients at risk for AUD using the health belief model (HBM) and the transtheoretical model to form the basis of the study, the precedent for use of a nurse navigator with vulnerable populations provides a framework for and data about success. In this study, the Nurse Navigators usual role is to completed comprehensive reviews and manage the patients with complex medical issues and developed plans for safe discharge, including follow-up plans with a primary care provider for patients referred to their services. In one study, patients assigned a nurse navigator for cancer care and psychosocial care services were statistically significantly more likely to report fewer problems with coordination of care, greater confidence in provider, and to receive psychosocial care than a control group at 12-month follow-up (Pautasso et al., 2018; Wagner et al., 2014).

Individuals at risk for or those with AUD are vulnerable to not receiving the appropriate care and therefore may have difficulty navigating the health care system on their own. These individuals may need guidance and years of medical and psychological assistance. The ED is the most logical place for a nurse navigator to assist those with AUD as it is often used for primary care for this patient population and first contact with medical professionals is often through the ED.

The literature has not suggested the use of nurse navigators for interventions with AUD patients; currently the literature focuses on nurse navigators in cancer care and other chronic diseases (Pautasso et al., 2018; Wagner et al., 2014; Zibrik, Laskin, & Ho, 2016;). Additional empirical analysis is needed to assess the feasibility and effectiveness of the nurse navigator in the ED in providing SBIRT to patients with AUD.
Depression, age at first use, and certain demographic variables have been shown to be predictive variables linked to AUD. Higher levels of depression have been associated with higher levels of alcohol use at hazardous levels (Ahlin, Hallgren, Ojehagen, Kallmen, & Forsell, 2015) in addition, individuals who consumed alcohol at an earlier age were more prone to develop dependency at a higher rate (Donaldson, Handren, & Crano, 2018).

**Predictive Variables**

**Depression.** Depression along with AUD can be debilitating for the individual and can be a burden on family, friends, and society. Individuals who revert to drinking during a major depression episode were typically younger, male, and white, and used alcohol prior to the legal age of 21 (NIAAA, 2006). AUDIT results were significantly higher in the depressed sample group compared to the individuals without depression. Similar findings were found when comparing at risk drinking e.g., binge drinking in the depressed group versus in the individuals without depression, and when comparing monthly binge drinking in the depressed group versus in the individuals without depression (Ahlin et al., 2015). Gabriels, Macharia, and Weich (2019) in a cross-sectional study found that most participants (78.3%) who had been drinking excessively for more than 12-months reported a high rate of major depressive disorder. Rincon-Hoyos, Catillo, and Prada (2016) in a secondary analysis study found a high prevalence of major depressive disorder in a population with AUD.

**Age at first use.** Younger age at which an individual first consumed alcohol has been associated with a greater lifetime of alcohol dependency and an increased risk of multiple relapses (NIAAA, 2017). Individuals who started to drink before the age of 14 went on to develop AUD at a significantly higher rate than those who first consumed alcohol at 21 years of
age (NIAAA, 2017). Moreover, individuals who consumed alcohol in their teenage years was predictive of binge drinking and arrests as young adults (Donaldson et al., 2018).

**Demographic variables.** Demographic variables predictive of AUD in the literature have shown that age and gender are predictors of increased alcohol use. For age, those individuals who are 26 years and older, binge drank at a higher rate than any other age group with 54.0 million (25.1%) in 2018 (SAMHSA, 2019a). As previously mentioned, for binge drinking, the rate on at least 1 day in the past 30 days was higher for males than for females for those 18 to 25 years of age (35.4% vs. 34.4%). For those 26 and older who admitted to binge drinking, 30.4% were males compared to 20.3% female. Additionally, the 12-month prevalence of AUD in the United States among those 18 to 25 years from 2017 through 2018 for Whites was higher than for other races at 78.8% (SAMHSA, 2019b). In this study, sample social demographics for individuals being studied will include age, age first started drinking, race/ethnicity, gender identity, educational attainment, income, work status, health insurance coverage, living situation, and marital status.

The HBM and the transtheoretical model form the basis for this dissertation study. The HBM posits that change depends on the individual’s psychological readiness to take action to change unhealthy behaviors, depending on the individual’s susceptibility or vulnerability to a disease (Maiman & Becker, 1974). The Transtheoretical Model is a theory of behavioral change processes that occurs in stages, rather than a single event (McKenna, 2013). Transtheoretical Model is an integrative model of behavior change and the concepts of the model are the stages of change.
Research Design

This pilot non-equivalent two group quasi-experimental design will utilize a convenience sample of patients 18 years and older in a Southern California ED setting assigned to the brief intervention (BI) or usual care (comparison) condition. The study uses a measure of self-report to identify a risk of AUD. The intervention delivered by the nurse navigator provides a brief intervention and is structured to provide feedback regarding individual alcohol consumption and data gathered from the screening. Additionally, it involves listening to the individual’s response to the feedback, understanding, repeating, and rephrasing what the individual shared. The final step involves exploring options and goal setting, and directing discussions toward the individual’s interest (Saitz, 2015a). This study is focused on individuals at risk for AUD therefore, individual’s presenting intoxicated from excess alcohol use will be excluded. These individuals would not be eligible as they would not be able to provide consent and brief intervention alone is insufficient. These individuals would need a referral for treatment to a specialty substance use disorder provider outside of the ED as part of the discharge process or referred to Alcoholics Anonymous 12 step program. These treatments are more intense and may consist of residential programs that are alcohol-free environments where the individuals are provided temporary housing and treatment and other interventions that may affect outcome analysis. It would therefore be beyond the scope of this study to refer participants for treatment. (Aronson, 2015).

The primary outcomes of the intervention will be alcohol consumption in the past 90 days using the daily and weekly limits and binge drinking parameters per NIAAA guidelines in addition to identifying drinking that may place the patient at risk for AUD using the AUDIT-C. The secondary outcomes will be an improvement in the alcohol-related readiness to change, as
measured by the stage of change e.g., precontemplation to contemplation, based on the Transtheoretical model, improved health beliefs, based on the Health Belief Model Instrument – Revised (HBMI-R), and improved depression scores, based on the PHQ-9 Patient Depression Questionnaire. If the ED is utilized as the primary setting for AUD screening and a nurse navigator is used for BI, then patients in the intervention group are expected to have better primary and secondary outcomes than patients in the comparison group at 3-month follow-up.

Previous studies utilizing RNs in the ED to conduct BIs at the bedside have shown a decrease in alcohol consumption in the intervention groups for short periods from 3-9 months as compared to comparison groups. The RNs in the studies, however, were bedside nurses with direct patient care, and educational levels of the RNs were not disclosed. Vipond and Mennenga (2018) reported on a systematic review of the literature to evaluate SBIRT in the ED by nurses and found some positive results with reduced number of drinks per occasion, and number of drinking days and weeks. Workload for the bedside nurse was a barrier to effective implementation. Most of the discussion was on the importance of education and buy in from the nurses. Most of the nurses were involved in screening, shorter screening tools were important in order to carry out SBIRT in the ED. In one of the studies, led by Désy, Howard, Perhats, & Li (2010) the outcome objectives for the quasi experimental study were improved for decrease in alcohol consumption and reduction in alcohol-related incidences (e.g., recurring ED visits, compliance with referrals, traffic violations, crashes) for the intervention group who received a BI and referrals to community resources. In another study, led by Désy and Perhats (2008) training issues voiced by nurses were needing more practice administering SBIRT via role playing, low staff motivation, and learning the process from an individual who was not experienced with BI. Additionally, in a couple of the study sites nurses shared that it was
uncomfortable and unrealistic to conduct the screening and delivery of the BI. Barriers to implementation included lack of privacy in the ED, acute pain of patients and short ED visits. Additionally, other barriers to implementation were lengthy consent forms and competing priorities with patient care.

The ED Nurse Navigators in the proposed study are bachelor’s prepared RNs who are trained to identify the needs of the patients for discharge back into the community. The role of the Nurse Navigator is to identify patients who may be at risk for unnecessary admission to the hospital or readmission to the ED after discharge. The Nurse Navigators complete a comprehensive review and manage the patients with complex medical issues, develop plans for safe discharge, including follow-up plans with a primary care provider upon discharge. Currently they refer AUD patients into community-based programs, private programs, and hospital contracted sites for those that are homeless, low-income, on disability, and those with psychiatric disorders. The ED Nurse Navigators have no direct patient assignments, and a different patient care focus than that of the bedside RN. Furthermore, the plan is for the Nurse Navigators to complete the 4-hours UCLA Integrated Substance Abuse Program training course and meet with the principal investigator (PI). Training details and the fidelity plan will be discussed in detail in the Methods section.

A Community Advisory Board (CAB) was assembled to guide in the logistics of implementing this study. In particular, the ED environment can be challenging with patients who are not feeling well and/or are injured and may be in a lot of pain. The pace in the ED is fast, the environment is loud, and SBIRT adds to time constraints already felt. This study will assess preliminary efficacy of screening for alcohol use and BI on patients who present to the ED with a risk for AUD utilizing established nurse navigators.
The specific aims in this pilot quasi-experimental study will include the following:

**Specific Aims 1.** To assess the preliminary efficacy of an RN navigator delivered BI (BI) on alcohol consumption, hazardous drinking, readiness to change alcohol use, and risk for AUD as compared with the comparison group at T2 (Time 2) 3-month follow-up.

**Hypothesis 1a.** The intervention group will report a significantly lower number of SDs on a typical day in the past 3 months than will the comparison group at T2 as measured by item two on the AUDIT-C.

**Hypothesis 1b.** Participants in the intervention group will report that they consumed 6 or more SDs significantly less frequently in the past 3 months than the comparison group at T2 as measured by Item 3 on the AUDIT-C.

**Hypothesis 1c.** Participants in the intervention group will report drinking alcohol significantly less frequently in the past 3 months than the comparison group at T2 as measured by item one on the AUDIT-C.

**Hypothesis 1d.** The proportion of participants who reported hazardous drinking in the past 3 months in the intervention group will be significantly lower than the comparison group at T2 as measured by the AUDIT-C.

**Hypothesis 1e.** The intervention group will have significantly greater readiness to change to reduce alcohol use than the comparison group at T2 as measured by the readiness to change questionnaire.

**Hypothesis 1f.** The mean positive AUDIT-C scores that measure AUD risk for both men (≥ 4) and women (≥ 3) among participants in the intervention group will be statistically significantly lower than that of the AUDIT-C risk scores in the comparison group at 3-months follow-up as measured by the AUDIT-C.
Specific Aims 2. To assess the preliminary efficacy of a RN navigator delivered BI for patients with AUD risk on depressive symptoms/feelings as compared with the comparison group at 3-months follow-up.

Hypothesis 2a. The mean depression scores that measure depressive symptoms/feelings among participants in the intervention group will be statistically significantly lower than that of the depression scores in the comparison group at 3-months follow-up as measured by the PHQ-9.

Specific Aims 3. To assess the preliminary efficacy of a RN navigator delivered BI to increase individual’s with AUD risk perceived susceptibility, perceived seriousness, perceived benefits, and to decrease perceived barriers on AUD risk, as compared with the comparison group, at 3-months follow-up.

Hypothesis 3a. The level of perceived susceptibility, seriousness, and perceived benefits of a risk reduction to AUD of an alternative action will be significantly higher among patients in the intervention group compared to those of those in the comparison group at 3-months follow-up as measured by the HBMI-R.

Hypothesis 3b. The level of perceived barriers to AUD risk will be significantly lower among participants in the intervention group than that of patients in the comparison group at 3-months follow-up as measured by the HBMI-R.

Specific Aims 4. To explore the feasibility of a nurse navigator delivered intervention on AUD risk and alcohol consumption at 3-month follow-up.

Significance to Nursing Science and Practice

Most health care providers, including nurses, have not received sufficient instruction to feel comfortable in administering a BI for patients identified at risk for AUD (Broyles, Kraemer et al., 2013; Désy & Perhats, 2008; Désy et al., 2010; Vipond & Mennenga, 2018; Wamsley,
According to the World Health Organization (2010), the nursing workforce should be appropriately trained, supervised, and provided support so that they may help to integrate early intervention services such as screening for substance use into routine practice.

In a randomized control trial, examining the efficacy of SBIRT to reduce both hazardous drinking and driving under the influence among young adults Sommers et al. (2013) used trained RNs not employed by the ED and reported that screening in addition to BI was needed to decrease alcohol consumption in daily drinking (>5 drinks per day) and binge drinking among nonalcohol-dependent young ED adults; findings at 6-month follow-up comparing the intervention group to the control group was statistically significant ($p < 0.05$). The ED is the optimal place to screen patients for AUD especially if their alcohol use is a contributing factor to their illness and or injury. They may be open to listening if they can understand the connection between drinking and their illness or injury. Screening can be done quickly to identify the level of treatment needed (SAMHSA, 2014). The BI is more likely dependent on the patient’s readiness to change and self-awareness of their disease.

Training knowledgeable nursing staff will be in keeping with the nurse’s scope of practice to use appropriate assessment, intervention techniques, and to create a plan of care for assisting patients in understanding the steps necessary to aid their recovery. Additional training will be important, as a greater number of low-income and medically underserved individuals will have health coverage under the ACA. This additional nationwide training, infrastructure, and resources should be available to health care professionals as they conduct SBIRT for AUD (Ghitza & Tai, 2014). A large majority of patients presenting to the ED may have chronic co-
occurring behavioral health disorders such as AUD therefore, nurses must be ready for the challenge to care for this patient population.
Chapter 2: Review of the Literature

Problem and Purpose

Alcohol use disorder (AUD) is typically considered chronic, affecting a third of the population in the United States and typically lasts a person's lifetime. Alcohol dependence and alcohol abuse have been integrated into one single disorder, AUD (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2016). Most of the United States population does not consume alcohol (35%), 37% are at low risk for AUD, 19% are at increased risk, followed by 9% of the population at highest risk (NIAAA, 2019). White, Slater, Ng, Hingson & Breslow (2018) analyzed data from the Nationwide Emergency Department Sample involving 945 hospitals in 33 states. They reported a 47% increase of emergency department alcohol related visits from 1223 to 1802 per 100,000 population between 2006 and 2014. Additionally, they reported the cost of these visits increased 272% from $4.1 billion to $15.3 billion.

In the following section alcohol consumption in the United States, and the incidence of driving under the influence of alcohol, deaths attributed to alcohol intake, and finally financial implications to California and Nationally will be discussed.

Alcohol consumption. In an analysis of the National Alcohol Survey for 2000, 2005, and 2010, Kerr, Mulia, and Zemore (2014) found an increase in SDs per year of 25% from 2000-2005 (1 to 2 SD/day) and (3 to 4 SD/day). From 2005-2010, an increase volume was found for heavy drinking days (5+ SD/day). The sample consisted of United States households with a sample size of 22,500, with telephone interviews conducted in both English and Spanish. The SD for this study was defined as 14 g of alcohol. The increase in alcohol intake was statistically significant, from 33 SD per year (95% CI [29.4 - 35.9]) in 2000 to 55 SD per year (95% CI [49.8 - 59.3]) in 2010 for women who drank 1-2 SD on any one occasion. For men, an increase in
alcohol intake was statistically significant from 60 SD per year, 95% CI [55.6 - 65.2] in 2000, to 76.3 SD per year, 95% CI [69.6 - 82.9] in 2010 for those who drank 1-2 SD on any one occasion. Furthermore, an increase in alcohol intake was also significant for women who drank 3-4 SD on any one occasion from 19 SD per year, 95% CI [15.6 - 21.5] in 2000, to 28 SD per year, 95% CI [23.1 - 32.6] in 2010. In summary, the National Alcohol Survey reported an increase in alcohol intake in the United States from 2000 to 2010 for women above the daily-recommended levels defined by NIAAA as more than 3 SD on any single day. In addition, alcohol intake increased for lower levels of use as well for 1-2 SD/day.

**Drinking and driving.** Over 28% of U.S. adults use alcohol in an unhealthy manner, i.e. drinking and driving; many of whom go unrecognized as having a problem and remain untreated (Saitz, 2015b). In 2013, 28.7 million surveyed drivers admitted to being under the influence of alcohol at least once while driving (National Institute on Drug Abuse [NIDA], 2015). The risk of being injured in a motor vehicle crash while under the influence of alcohol is increased after consuming just two SD within a 6-hour period as compared to no alcohol intake (odds ratio [OR] = 2.20). Furthermore, the odds ratio of being injured in a motor vehicle crash increased from 5 to 10 after consuming 4 to 5 SD within a 6-hour period. Lastly, the odds ratio of being injured in a motor vehicle crash increased to 52 after 10 SD (Moyer, 2013).

**Deaths.** Excess consumption of alcohol has contributed to numerous fatalities in the U.S. (Mesnick, 2015; National Highway Traffic Safety Administration [NHTSA], 2018). During the years from 1982 to 2016, data reported by the NHTSA (2018) revealed a decline in alcohol impaired driving fatalities for those drivers with a blood alcohol level of 0.8 or greater from 48% to 28%. In 2005, there were 13,582 fatalities compared to 10,497 in 2016: representing a 3%
decrease from 28% to 31% of all passenger with an elevated blood alcohol level from 2005 to 2016 (NHTSA, 2018).

In a blog update report on HHS.gov highlighting alcohol-poisoning deaths, Mesnick (2015) reported that excessive alcohol use is a problem of all ages. The review of U.S. death certificates from 2010-2012 revealed that 2,200 deaths yearly were related to alcohol poisoning and 75% of these deaths involved adults 35 to 64 years of age. Furthermore, non-Hispanic Whites were among most of these deaths, and 75% of them were male. Lastly, AUD was a cause in 30% of the deaths.

**Financial implications to California and nationally.** The cost of AUD in the United States is estimated to be in the billions annually. The median cost to the state of California in 2010 was $35 billion, $14.5 billion of which was borne by the California state government. Binge drinking alone cost California $25.8 billion in 2010 (Sacks, Gonzales, Bouchery, Tomedi, & Brewer, 2015).

In a study addressing elderly individuals presenting to the Emergency Department (ED), Tadros, Mason, Davidov, Davis, and Layman (2015) conducted a nationwide retrospective chart review from ED medical records for patients with a recorded primary diagnosis of alcohol use related disorders e.g., cardiac dysfunction, stroke, hypertension, cirrhosis, and hepatitis caused by AUD from 2006 to 2011. The sample of 1,620,345 was composed primarily of males (73%) who were on average 72.6 years old and had Medicare as their primary insurance. Most of the visits were in the southern part of the United States. The total cost of caring for the elderly treated and released from the ED for alcohol use related disorders was approximately $43 billion. Between 2002 and 2020, these costs are projected to double as baby boomers age.
Literature Review Related to Key Variables/Concepts

This literature review discusses the predictors of AUD for individuals at risk for AUD followed by, race/ethnicity, gender and age differences of individuals presenting to the ED. Additionally, characteristics of patients who present to the ED with AUD are discussed. Furthermore, how a standardized model for early identification of risk for AUD Screening, Brief Intervention, and Referral to Treatment (SBIRT) have been effective in reduction of alcohol use, and the importance of the patients’ readiness to change and the clinician readiness to listen prior to any interventions are discussed. Lastly, support for SBIRT in the ED, the cost effectiveness of SBIRT in the ED and on society, and the importance of a 3-month follow-up are discussed.

Predictors of AUD

The following paragraphs will depict multiple epidemiological studies confirming predictors of AUD found in the literature to include depression and age at first exposure to alcohol use, in addition to, social norms and health beliefs.

Depression. The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) proposes screening for disorders that may co-exist with substance abuse. Mattisson, Bogren, Horstmann, and Öjesjö (2014) designed a longitudinal study to predict first incidence of alcohol use in 3,372 individuals with mental disorders by age, gender, and sociodemographic predictors from 1947 to 1997. The researchers reported that being younger, male, and having a depressive disorder were found to be statistically significant predictors of first incidence of AUD, p < .001. Multivariate model results revealed that being 15-29 years of age and male was a statistically significant predictor of first incidence of AUD when compared to similar ages in females, hazard ratios (HR = 0.98, 95% CI [0.97 - 0.99], p = 0.001). Being a male was a statistically significant predictor of first incidence of AUD (HR =
Having a mental disorder was a predictor of first incidence of AUD: depression ($HR = 2.84$, 95% CI [1.91 - 4.23], $p < .001$); anxiety ($HR = 2.73$, 95% CI [1.76 - 4.22], $p < .001$); and psychosis ($HR = 2.87$, 95% CI [1.46 - 5.65], $p < .001$).

Relapse is when individuals resumes consuming alcohol at risky drinking levels e.g., binge drinking 4+ daily SD for men and 5+ SD for women, after either reducing or quitting drinking which can be triggered by multiple factors (biological, psychological, environmental, and social) in those with AUD (Witkiewitz et al., 2015).

In a secondary analysis of the National Epidemiologic Survey on Alcohol and Related Conditions 2006 survey, Agosti (2013) assessed predictors of alcohol relapse during recurrence of major depression in a sample of noninstitutionalized individuals with a history of AUD living in the United States. The sample size included 2,820 individuals ages 18 years old or older from all 50 states with a history of AUD. A majority of those studied (74%) were male and (75%) were white. Results showed that 77% of males and 23% of females experienced an AUD relapse. Of these, 37% were never married and 40% did not complete high school. The individuals who relapsed were younger than those who did not relapse. Age of onset of AUD during recurrence of a major depressive disorder was a significant predictor of relapse ($age \leq 21, OR = 3.2$, 95% CI [2.2 - 4.6], $p < .001$).

An analysis of alcohol habits of patients with depression compared to patients without depression was completed by Ahlin et al. (2015). All individuals who completed the Alcohol Use Disorder Identification Test (AUDIT) and the Montgomery-Asberg Depression Rating Scale had a psychiatric assessment to confirm diagnosis. The sample size for the depressed population was 941 with a mean age of 43 years, and 73% female. The Montgomery-Asberg Depression Rating Scale baseline was 21.60 indicating mild to moderate depression. The sample size in the
population without depression was 663 with a mean age of 46.2 years, and 56% females. AUDIT results were significantly higher in the depressed sample group (\(M = 4.33\)) compared to the population without depression (\(M = 3.99, F(1, 1459) = 10.03, \eta^2 = 0.007, p < 0.01\)). Similar findings were found when comparing at risk drinking (e.g., binge drinking in the depressed group; \(M = 22.4\)) vs. in the population without depression (\(M = 15.0, \chi^2 = 11.66, OR = 1.63, p < 0.01\)), and when comparing monthly binge drinking in the depressed group (\(M = 12.7\)) vs. in the population without depression (\(M = 8.1, \chi^2 = 8.47, OR = 1.65, p < 0.01\)). In addition, males with depression scored significantly higher (\(M = 5.92\)) on the AUDIT compared to the male population without depression (\(M = 4.73, t = -2.86, d = 0.26, p < 0.01\)). By age, those 28-50 and 51-71 with depression (\(M = 4.25, 3.97\)) scored significantly higher on the AUDIT compared to the population without depression (\(M = 3.89, 3.16; F(1, 744) = 6.584, \eta^2 = 0.009, p < 0.01; F(1, 505) = 11.219, \eta^2 = 0.022, p < 0.01\), respectively; Ahlin et al., 2015).

**Age at first exposure.** Findings revealed that individuals tended to become dependent on alcohol before the age of 25, usually 10 years after they started drinking if they consumed alcohol before the age of 14. When an individual started drinking before the age of 14 that individual was more likely to be diagnosed with AUD and relapse after either reducing or quitting drinking as opposed to someone who started drinking after the age of 14 (NIAAA, 2017).

The 2018 National Survey on Drug Use and Health by Substance Abuse and Mental Health Services Administration (SAMHSA, 2019a) enrolled 67,500 participants, of which 25% were 12-17 years of age. In the previous month, 9% of the respondents reported that they had consumed alcohol, 4.7% reported binge drinking, and 0.5% reported heavy drinking in the last month. When comparing individuals who drank before the age of 14 vs. individuals who started
to consume alcohol at the age of 21 or older, those who consumed alcohol prior to the age of 14 were at increased risk for AUD and experienced lifetime dependency. Early age drinking is predicative of past year drinking frequency, volume, and binge drinking (NIAAA, 2019).

Furthermore, other findings revealed elevated hazard ratios scores of developing lifetime dependence ($HR = 1.78, 95\% CI [1.51, 2.11]$) and dependency within 10+ years ($HR = 1.69, 95\% CI [1.38, 2.07]$), when the individuals started drinking before the age of 14 years old vs. 21 year. In addition, if the individuals started drinking prior to the age of 14 years, they had a higher odds ratio of experiencing two or more episodes of relapsing ($OR = 3.09$) and of experiencing these relapses exceeding 1 year ($OR = 2.62$; Hingson, Heeren, & Winter, 2006).

In a meta-analyses and systematic literature review it was reported that individuals who started to drink prior to the age of 15 years versus those who started to drink at the age of 21, were more at risk for AUD (40% vs. 10%; Hingson & White, 2014). In addition, early age drinking has been associated with chronic relapsing for longer periods and continued dependence. This continued use and relapsing can lead to risky behaviors such as drinking and driving and injury to oneself. Lastly, when the individual consumed alcohol at the early age of 12-14 years, 92% of the time, they tended to drink 5 or more drinks 6 or more times a month.

**Health beliefs.** In a study of college students led by Champion, Lewis, and Myers (2015), the relationship between social norms, health beliefs, and drinking behavior was explored. Their study described social norms to be what the individual thinks is the typical amount that others in a certain group (e.g., college students) will typically drink and was measured using the Drinking Norms Rating Form. The HBM constructs were utilized to measure health beliefs, and drinking behavior was measured using the AUDIT. The sample size consisted of 283 students, 172 (60.8%) of whom were female, 124 (43.8%) African American and 134
(47.3%) college seniors. For most, age of first drink was 18 years or older (33.6%). The average age of the students was 21. The researchers reported that perceptions of both social norms and health belief constructs accounted for significant amounts of variance in drinking behavior among students. The most significant being perceived susceptibility ($\beta = .521$, $t = 8.99$, $p < .001$), followed by perceived benefits ($\beta = -.210$, $t = -3.83$, $p < .001$) and lastly, amount of drinking norms perceived by the student ($\beta = .191$, $t = 4.15$ $p < .001$). The students were asked if they felt they would develop an alcohol problem in the future (perceived susceptibility). The students felt susceptible but continued to consume alcohol at risky levels; these perceptions could come from the belief that alcohol problems will not happen to them in this age group. Perceived barriers e.g., “getting help for alcohol problems is embarrassing” and beliefs that moderate drinking is beneficial lowered the overall consumption of alcohol (Champion et al., 2015).

**Alcohol Use Disorder and the Emergency Department**

The spectrum of alcohol-related injuries and illnesses in the ED are discussed in the following section as is race/ethnicity, gender and age differences of individuals presenting to the ED. Additionally, characteristics of patients who present to the ED with AUD are discussed.

**AUD-associated injury and illness.** Cherpitel, Witbrodt, Ye, & Korcha (2018) analyzed data from the International Collaborative Alcohol and Injury Study with a sample of 14,142 ED patients 18 years and older from 32 ED in 28 countries. One of the aims was to analyze the drinking patterns of individuals who presented to the ED within 6 hours of an injury and the likelihood of that injury being alcohol related. The researchers found that drinking patterns of those presenting to the ED over the last year was predictive of traffic injuries, violence-related injuries, falls, and other injuries ($p<0.001$). Additionally, frequent heavy drinking was a predictor
for injury related to violence (OR=2.57), for falls (OR=2.86), for other injuries (OR=1.71). This study exposes the importance of screening all individuals who present to the ED with or without injury as this could reveal a drinking history that may lead to future illnesses and injuries.

In a secondary analysis of the National Alcohol Survey for 2000, 2005, and 2010, Cherpitel and Ye (2012) reported a significant upward trend in alcohol and drug-related ED and Primary care visits. The researchers surveyed 10,991 individuals who presented either to the ED, or to their Primary care for injuries or illnesses related to alcohol based on having consumed alcohol or another drug within 6 hours before an injury or illness, or who received no treatment for alcohol related injuries or illness. Individuals who reported receiving treatment for injuries or illnesses related to drugs and alcohol use were reported in the article. Of those (n = 2,448) who presented to the ED for alcohol and drug-related injuries and illnesses, 69% were male and 31% were females. Additionally, of those who self-reported having alcohol 6 hours before an injury or illness event, 38% were Black, 34% were White and 28% were Hispanic. Furthermore, 48% of the adults were between the ages of 18-29, and only 34% had health insurance between 1995 and 2010. Also, a significant trend in the upward direction was reported for those individuals presenting to the ED for alcohol-related injuries or illnesses compared to individuals presenting to primary care for injury or illness visits in 1995 (5.0%) to 2010 (9.7%, p < .01). Finally, the odds of an individual presenting to the ED doubled for alcohol-related injuries or illnesses compared to primary care from 1995 to 2010 (OR = 2.36, p < .05; Cherpitel & Ye, 2012). This study showed a significant trend in the upward direction for alcohol-related injuries visits to the ED and these results may indicate the importance of SBIRT in the ED for alcohol interventions.

**Race/ethnicity, gender, and age differences.** In a retrospective observational descriptive study, Lotfipour et al. (2013) enrolled a convenience sample of Spanish speaking individuals
who presented to a tertiary care university hospital ED for medical care. Undergraduate student research assistants recruited individuals for the study from 8 a.m. to midnight daily. A computerized alcohol screening and brief intervention program was used to collect information and provide a brief intervention; the tools inputted into computerized alcohol screening and brief intervention were developed by the NIAAA in both English and Spanish and followed the same strict guidelines set by NIAAA. The program consisted of a hand-held computer device containing standardized tools in Spanish (i.e., AUDIT, SBIRT, readiness to change scale). The sample size over a 4-year period from 2006 to 2010 was 1,816, the median age was 43, ranges in age were 18-20 (2%), 21-24 (5%), 25-29 (10%), 30-39 (24%), 40-49 (23%), 50-64 (24%), and 65+ (12%). Additionally, 45% of the participants reported that they were male and 55% reported that they were female. Ethnicities of participants were not reported. The researchers reported that Latinos were the largest ethnic minority in the United States and the largest group of foreign-born immigrants. Additionally, few screening tools to detect AUD risk for Latinos or Spanish-speaking patients have been evaluated. Hispanic had higher rates of AUD and the research to detect AUD using brief intervention, and readiness to change for age and gender characteristics in Hispanics is minimal.

Males between 21 and 24 years of age (16%) and females between 18-20 years of age (6%) were significantly more at risk to have AUD \( (p < .05) \). The group considered most likely for at risk drinking, defined as greater than 5+ SD for men and 4+ SD for women, were males ages 18-20 (48%), females 21-24 (18%), or those 65 years and older (11%) \( (p < .05) \). There were significant gender and age differences regarding frequency of alcohol use: males (15%) and females (2%) consumed alcohol one or more days a week, \( p < 0.05 \). In addition, more males (5%) than females (1%) consumed alcohol above the recommended NIAAA daily guideline

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limits, \((p < 0.05)\). The study revealed differences between gender and age for this Spanish-speaking sample; males consumed more alcohol and females had slightly higher readiness to change scores (69\%). The higher readiness to change scores indicate an increased readiness to change, which is not often the case in patients who consume less alcohol, as they usually do not perceive the need to decrease or cease alcohol use. Latino Spanish-speaking males reported having more liberal attitudes and more stressors, all of which led to increased alcohol (Lotfipour et al., 2013).

Trillo, Merchant, Baird, Liu, & Nirenberg (2012) surveyed a random sample of patients at two urban academic EDs comparing differences between women and men’s alcohol use, alcohol misuse, and estimated blood alcohol concentrations. The following tools were used for outcome measures, the Alcohol Use Questionnaire collected information on quantity and frequency of alcohol use, the AUDIT measured alcohol misuse, and blood alcohol concentration was measured using the individuals’ weight and amount consumed in a two-hour period. The sample size consisted of 513 participants who comprehended either English or Spanish. Most participants were women (52.1\%) white non-Hispanic (55.8\%) and white Hispanic (20.6\%), with a median age of 34. The male participants self-identified as white non-Hispanic (65\%) and white Hispanic (8.5\%) with a median age of 38. In this study, men reported higher number of SDs consumed on a typical day, 4 SD as compared to 3 SD for women, \(p < 0.02\). Additionally, men reported more days spent drinking, 5 days as compared to 4 days for women, \(p < 0.01\). Furthermore, men reported higher percent of days spent drinking in 1 month, 16 days as compared to 13 days for women, \(p < 0.01\). Also, men reported consuming more SD on 1 occasion, 6 SD as compared to 4 SD for women, \(p < 0.01\). On average, men had higher AUDIT scores (\(Mdn = 6 \; [3–10]\)) as compared to women (\(Mdn = 4 \; [2–6]\)), \(p < 0.01\). Women, however,
showed similarly equal levels of hazardous drinking behaviors to that of men based on percent AUDIT scores (26.6 vs. 24.4). In addition, blood alcohol concentration results for women (\(Mdn = 0.09 [0.03 – 0.19]\)) and men (\(Mdn = 0.08 [0.03 – 0.16]\)) were similar when drinking and binging leading researchers to believe that both sexes had similar levels of intoxication. The similar hazardous drinking and similar alcohol concentrations in this study for men and women, although women consumed less SD per day, and per month, could have been associated with reported drink preferences (men preferred beer overall whereas women preferred mixed drinks and wine). Depending on the volume of alcohol-consumed, mixed drinks contain 40% alcohol in 1.5 ounces as compared to wine, which contains 12% in 5 ounces and beer, which contains 5% in 12 ounces). This study provides information that is important when screening patients for alcohol use. The quantity and frequency are important for consumption numbers; however, in order to calculate the true drinks per day and week the provider should assess the type of alcohol the patient is consuming.

**Characteristics of ED AUD patients.** A telephone survey was administered by Indig, Copeland, and Conigrave (2009), for individuals who presented to two EDs in Australia over four weekends to assess different methods of detecting alcohol use and to identify characteristics of patients at risk for AUD. The telephone survey was administered in English 7-10 days after their ED visit. Those individuals who participated in the followed-up interview, \(N = 389\), were significantly younger (40.2 years) compared to those lost to follow-up (49.3 years, \(p < 0.01\)). The prevalence of alcohol was detected using various methods such as ED diagnostic codes (7%), nursing triage notes (34%), and medical record review (60%). Approximately 37% of individuals who presented to the ED had some documentation about their alcohol consumption, and only 62% of individuals with alcohol-related ED visits were asked about their alcohol consumption.
The participants who presented with alcohol-related health issues (e.g., psychosis, intoxication) vs. non-alcohol-related issues, were more likely to arrive with an alcohol-related problem or illness ($OR = 5.5$, 95% CI [2.6 - 11.8], $p < 0.05$); with injuries ($OR = 4.5$, 95% CI [2.3 - 8.7], $p < 0.05$); after hours ($OR = 3.4$, 95% CI [1.8 - 6.5], $p < 0.05$); by ambulance ($OR = 2.6$, 95% CI [1.4 - 4.9], $p < 0.05$); or with a mental health issue (e.g., psychosis; $OR = 2.3$, 95% CI [1.1 - 4.9], $p < 0.05$). Characteristics of risky drinkers (AUDIT $\geq 8$) vs. non-risky drinkers were reported as: being under the age of 40 ($OR = 4.4$, 95% CI [2.3 - 8.3], $p < 0.05$); having alcohol problems ($OR = 4.3$, 95% CI [2.0 - 9.0], $p < 0.05$); more likely being male ($OR = 3.6$, 95% CI [2.0 - 6.], $p < 0.05$); using illicit drugs ($OR = 3.2$, 95% CI [1.8 - 5.6], $p < 0.05$); presenting with injuries ($OR = 2.5$, 95% CI [1.4 - 4.5], $p < 0.05$); arriving after hours ($OR = 1.9$, 95% CI [1.1 - 3.6], $p < 0.05$; Indig et al., 2009).

A SAMHSA grant-funded ED study by Akin et al. (2015) analyzed participants at risk for substance abuse. The study reported on the characteristics of participants ($N = 67,137$) screened by SBIRT specialists and who provided motivational interviewing. Outcomes were based on day and time over a 1.5-year period. Just over 14,000 (21.8%) individuals screened positive for unhealthy alcohol or drug use with a mean age of 48.6 years of age. Men were more likely than women to significantly screen positive (30.1% vs. 13.8%, $\chi^2 = 2657.62$, $p < .001$). Non-Whites were more likely than whites to screen positive (22% vs. 19.9%, $\chi^2 = 44.84$, $p < .001$). The SBIRT specialist reached 56% of those who screened positive ($n = 7,910$), and out of these 82% completed a full assessment and received a brief intervention ($n = 6,469$). Both time and day were significant factors for when an individual would screen positive and when they could be reached.
During the weekend from the 11 p.m. to 7 a.m. shift, there were more individuals that screened positive (27.8%) than for all other shift rates, ranging from 20% - 24% (p < .01). Additionally, during the weekdays, there were more individuals that screened positive on the 11 p.m. to 7 a.m. shift (24.3%) than the weekday and weekend 7 a.m. to 3 p.m. and 3 p.m. to 11 p.m. shifts (20.7, 19.7% and 20.4, 20.4%, respectively, p < .01). Furthermore, the 11 p.m. to 7 a.m. shift for both weekdays (47.5%) and weekends (38.0%) were the most difficult times to recruit patients in the ED for screening (p < .001). Also, the 7 a.m. to 3 p.m. shifts during the weekday (63.3%) was the best time to recruit patients in the ED for screening, (p < .001). In addition, a higher number of patients presented to the ED on weekdays between 7 a.m. to 3 p.m. (63.3%), and weekends between 7 a.m. to 3 p.m. (59.2%), p < .001. Finally, length of stay was longer on weekdays between 3 p.m. to 11 p.m. (7.5 hours, p < .001; Akin et al., 2015). The times and days reported may assist in planning for future studies for recruitment of participants with AUD.

The SBIRT model provides a standard process to screen individuals identified at risk for AUD. The model assists in early intervention and referral for treatment for those individuals at risk for AUD. Research reported by NIAAA has shown that a third of people who seek formal treatment for alcohol problems are able to remain alcohol free, decrease its use, and have fewer alcohol-related problems for up to 1 year (NIAAA, 2014). In summary, the U.S. Preventive Services Task Force developed clinical guidelines based on a systematic review of research published between 1985 and 2011 on SBIRT for risky alcohol use in adults, adolescents, and pregnant women (Moyer, 2013). Studies have also shown that individual readiness to change predict alcohol consumption outcomes at follow-up (Skewes, Dermen, & Blume, 2011).
Standardized Model for Early Identification of Risk for AUD: SBIRT

In the following section, the literature on how SBIRT and Alcohol Use Disorder Identification Test Consumption (AUDIT-C) have been used to reduce alcohol consumption are discussed.

Current research indicates that the hospital ED can be used to reduce alcohol use and the consequences of its use, using SBIRT and an evidenced-based assessment tools such as the AUDIT-C. Individuals screened for risk of AUD in an ED should be screened utilizing SBIRT, an evidenced-based model (Babor et al., 2017). The core components of SBIRT are screening, brief intervention, and referral to treatment. Screening is conducted using an evidenced-based screening tool such as the AUDIT-C (Babor, et al., 2017). Additionally, a brief intervention should be completed for all patients at risk of AUD, raising the individuals’ awareness of risks and increases motivation to work on problems caused by drinking. A referral to treatment is initiated for those individuals identified with hazardous drinking prior to their discharge who acknowledge risks and are seeking help. This study is focused on individuals at risk for and who may have AUD. Individual’s needing a referral to treatment identified by the ED Physician and who may be discharged directly to an inpatient facility will be excluded. These patients may be provided with a brief intervention that my affect data outcomes.

**Screening.** The Joint Commission (2019) recommended that hospital providers identify unhealthy drinking by utilizing validated screening tools such as the AUDIT-C, and provide evidence-based behavioral counseling, and interventions to improve unhealthy alcohol intake. The AUDIT-C is a 3-item validated instrument that identifies cases of hazardous drinking that may place the patient at risk for AUD and takes just over a minute to complete (Barata et al., 2017). The AUDIT-C has been modified from the 10-item AUDIT questionnaire, for use by busy
personnel working in a medical setting. The validity and internal consistency of the abbreviated versions of the AUDIT (AUDIT-C) has been studied in the ED settings and is effective for use in this setting.

In a study conducted by Meneses-Gaya et al. (2010), the validity and internal consistency of the AUDIT-C was assessed utilizing a sample of 530 individuals presenting to an ED and Psychosocial Care Center. The sample was predominantly male (81.5%) with a mean age of 41 years and primarily Caucasians (52%). Participants from the ED were primarily male (63.5%) and Caucasian (54%), with a mean age of 35 years. The percent diagnosed for alcohol abuse for both the Psychosocial Care Center and ED was 9%, for dependence 33%, and for combined abuse and dependence 42%. Results showed that the abbreviated versions of the AUDIT, the AUDIT-C, had good predictive validity with high sensitivity (0.78 to 0.96) and specificity (0.74 to 0.94). The AUDIT-C had high area under the curve indices for screening of alcohol abuse (.89, .92), for dependence (.93, .95), and for combined alcohol use and dependence (0.92, 0.95). The AUDIT-C was comparable to the AUDIT for abuse (0.92), for dependence and for combined alcohol use and dependence (0.96). Both the AUDIT and AUDIT-C resulted in the same internal consistency Cronbach’s alpha (≈ 0.94). Lastly, the AUDIT-C presented high levels of correlation with the AUDIT, (r = 0.97).

Screening for AUD risk can be in the form of a physical exam, blood tests, or a standardized alcohol-screening tool. Smith (2013) reported that screening tools such as the Full AUDIT and AUDIT-C were the most accurate ways to identify hazardous drinking that may place the patient at risk for AUD and were less costly than the other forms of screening e.g., blood tests. Screening questionnaires can be quick and simple and responses to questions regarding quantity and frequency can be used during a brief intervention. The impact of drinking
alcohol is dependent on total volume and drinking pattern; screening identifies dependence as well as patterns and can reveal if current alcohol intake may be leading to harmful effects (Smith, 2013).

**Brief intervention.** Brief intervention (BI) is an intervention for patients at risk of developing AUD and can take as little as 5 minutes to address one or two specific behavioral issues deemed to be triggers that may be causing the individual to consume alcohol (Aronson, 2015). BI resulted in clinically significant improvement in patients’ drinking behavior and was reported as a small investment in time and staff resources (Babor, Del Boca, & Bray, 2017). This standardized intervention allows the medical professional to provide a structured way to assess a patient’s substance use, intervene, and create a partnership with the patient by use of motivational interviewing. Motivational interviewing allows patients to think about and resolve uncertainty about change (Aronson, 2015; Miller & Rollnick, 2002). As a result, the patient, not the clinician, does most of the talking. The clinician should listen rather than give advice, ask permission to add any suggestions, and restate what the patient has shared (Ingersoll, 2015).

In a randomized control trial, D’Onofrio et al. (2012) evaluated the efficacy of a BI and hypothesized that hazardous and harmful drinking, such as binge episodes, would be reduced for the past week and past 28 days. These outcomes were proposed in patients who received a BI with a 1-month telephone call booster BI that consisted of reinforcement of participants’ alcohol reduction and relapse prevention as compared to a BI alone or usual care with assessment and a usual care group with no assessment. Emergency practitioners that were physicians and residents, physician associates, and advanced practice RNs administered the BI while nurses performed the booster call at 1 month. The usual care group received an intervention targeting alcohol use and were screened by a health questionnaire administered by a research assistance.
The large sample ($N = 889$) were randomized into four groups: BI with booster ($n = 295$, $M = 32.3$ years, $14.2\%$, males = $73\%$), BI ($n = 297$, $M = 30.7$ years, $13.2\%$, males = $70\%$), usual care with assessment ($n = 148$, $M = 35$ years, $15.4\%$, males = $75\%$), and usual care with no assessment ($n = 149$, $M = 33.2$ years, $15.1\%$, males = $71\%$). Outcomes were reported at baseline, 6-months, and 12-months. Results indicated that the BI with booster versus the BI group showed a significant reduction in number of drinks from baseline to 12-months (Baseline = 20.4/19.8, 6-months = 11.6/12.7, 12-months = 13.0/14.3, $p = 0.045$) and for binge episodes (Baseline = 7.5/7.2, 6-months = 4.4/4.8, 12-months = 4.7/5.1, $p = 0.031$). The researchers reported that the booster added no additional benefits and that a brief intervention alone was just as effective. In addition, the assessment provided to the usual care group had no effect on alcohol consumption when compared to the usual care group with no assessment. This study adds further support to a brief intervention for patients who present to the ED with risk for AUD.

In a cluster randomized control trial, Drummond et al. (2014) conducted a pragmatic study of alcohol screening and BI at several EDs in England. Eligibility, screening, consent and baseline date were carried out by ED staff at three of the nine sites, and by research teams at six of the nine sites. Three different alcohol interventions with three intensities and complexities were carried out. One, minimal intervention control group with test result feedback indicating unsafe drinking levels and an education pamphlet on local alcohol services, with 100% receiving the intervention. Two, intermediate intervention group with 5-minute brief advice about alcohol risk and an education pamphlet on local alcohol services, with 97% receiving the brief advice and 100% receiving the pamphlet. Three, intensive intervention with a 20-minute brief lifestyle counseling alcohol intervention plus a brief advice about alcohol risk and an education pamphlet on local alcohol services, with 50% receiving the counseling, 99% the brief advice, and 100%
receiving the pamphlet. The primary outcome was a decrease in AUDIT scores at 6 months as compared to baseline, and the secondary outcome was decreased average number of drinks per day and improvement of readiness to change at 6- and 12-month follow-up. Recruitment was initiated and completed after one year with a 12-month follow-up completed two-years after starting recruitment. There was no statistical significance in follow-up rate at 6 and 12-months between the three intervention conditions. The sample characteristics included a mean age of 34.6 years, males (65%), White (88%), and average number of drinks was 2.3/day. Results of this study revealed that there was no significance for AUDIT scores, for decreased average number of drinks per day, and for readiness to change at 6- and 12-months between any of the intervention groups. The researchers reported that it may be difficult to implement screening and brief intervention in the ED without external support from staff who specialize in AUD however, simple screening followed by simple clinical feedback and an alcohol information pamphlet may be all that is needed.

In a randomized control trial, Field and Caetano (2010) compared brief motivational interviewing to treatment as usual in a trauma center for injured patients with AUD. Trained counselors interviewed patients regarding their alcohol use, alcohol abstinence, problems with alcohol, and alcohol dependence, followed by a 6- and 12-month follow-up telephone call and compared their findings to baseline results. The sample size was 1,336 and average age was 33 years, males (82%), employed individuals (69%), single or never married (46%), Whites (46%), Hispanics (34%), and Blacks (20%), less than a high school education (37%) and high school diploma or equivalent (36%). Patients assessed with alcohol dependence at baseline (44%) were significantly more likely to be Hispanic ($\chi^2 = 14.5$, $p < .001$), male ($\chi^2 = 7.5$, $p < .01$), single or never married ($\chi^2 = 9.3$, $p < .01$), and with less than a high school education ($\chi^2 = 21.7$, $p <$
.0001), when compared to patients that were not assessed as alcohol dependent. Patients assessed with alcohol dependence at baseline, and who received brief motivational interviewing, as compared to treatment as usual, had a statistically significant decrease in alcohol use per week as measured by standard drinks (SD) at 6 months (SD = 11.7, s = 22.1) vs. (SD = 14.7, s = 28.9, p = 0.03) and 12-month follow-up (SD = 12.9, s = 23.1) vs. (SD = 17.5, s = 31.3, p = 0.02).

Additionally, the patients with alcohol dependence received brief motivational interviewing and reported greater days of abstinence vs. the patients who received treatment as usual at 12 months (M = 65.7 days vs M = 40.15 days, p = .007). Furthermore, the brief motivational interviewing patients with alcohol dependence were less likely to be assessed as alcohol dependent at 6-month follow-up as compared to the treatment as usual group (SD = 60 s = 33 vs. SD = 83, s = 45, p = .005; Field & Caetano, 2010).

Two cohort studies reported by Babor et al. (2017) from a cross-site evaluation of an SBIRT program took place over 5-years and were funded by SAMHSA (Cohort 1 and 3). Implications for health policy, clinical practice changes, intervention research, and public health were discussed. Goals included offering SBIRT for all individuals with substance use disorders, and early intervention for care. The sample included more than one million individuals in cohorts one and three, with mean ages of 43.6 and 44.1 years, female (56.2%; 55.9%); White (47.7%; 65.6%); Black (26.2%; 23.3%) respectively and Hispanic (28.2%) in Cohort 1, none reported for Cohort 3. Alcohol consumption was reported as the most used substance (74.4%; 80%) followed by illicit drugs (41.8%; 45.8%), and lastly dual substance users (30%; 32.1%). An SBIRT program matrix was developed and utilized as a conceptual framework for program implementation and evaluation. A contracted service model was utilized to administer SBIRT by outside independent addiction treatment agencies. Staff interviews regarding conditions that may
help, or hinder implementation were also identified. The researchers adopted shorter screening tools and focused on emergency department settings to maximize how many individuals could be reached. Program fidelity was assessed using a protocol SBIRT Checklist for Observation in real time and findings from these observations revealed that the providers in cohort three were more prone to follow all the steps when administering motivational interviewing. The mean time to deliver a pre-screen was one minute and 19 seconds and a full screen was 4 minutes and 28 seconds. In the cohort one study it was reported that because of better intervention intensity, heavy drinking declined by 72% and drug use by 80%. In Cohort 3 it was reported that brief intervention was more effective and less costly than brief treatment; it would cost $8.90 for a one percent-point reduction in the probability of using any alcohol. The cohort one group reported sustainability successes with a total of 88 sites reporting that they were operational in providing SBIRT despite running out of funds. Some of the factors identified for sustainability of an SBIRT program were program champions on site, funding, and effective management of SBIRT challenges. In addition, the cohort one group reported that SBIRT would be self-sustaining financially in settings with larger patient populations when relying on public and private insurances. Lastly, the group reported that training to improve clinical skills to provide SBIRT would be an important factor for success.

Individuals presenting to the ED with AUD tended to have higher than average rates of being injured or killed in motor vehicle crashes than other ED patients. Brief Intervention for excess drinking has been shown to be effective in decreasing injury and death associated with alcohol use (Barata et al., 2017; Cherpitel et al., 2018). In addition, individuals in EDs were usually in crisis and more open to feedback when they could connect their drinking to their crisis, thereby opening themselves up to BI (Sommers et al., 2013).
Witkiewitz et al. (2017) in a secondary data analysis reviewed three randomized clinical trials and reported decreased alcohol use from baseline for patients with heavy episodic weekly use in the past 90-days. Results indicated that participants at follow-up with low risk drinking or abstinence had the best long-term outcomes for drinking-related consequences, mental health, or physical health up to several years. In two large randomized studies Kline-Simon, Litten, Weisner, and Falk (2017), enrolled participants who had received treatment for AUD and reported that participants at follow-up who abstained or were low-risk drinkers continued to report the same results at 9 years and maintained favorable psychosocial outcomes.

According to the U.S. Preventive Services Task Force, a BI takes anywhere from 6 to 15 minutes (Moyer, 2013). BI engages the patients, allowing the provider or other clinical staff to have a conversation, provide feedback, advice, and referral for treatment based on the patients’ readiness to change (Centers for Medicare & Medicaid Services, 2015).

**Referral to treatment.** Individuals identified as drinking above the recommended NIAAA guidelines, described earlier in this chapter, through screening and meet the criteria for AUD who are referred for treatment by the ED physician to a specialty substance use disorder provider outside of the ED will be excluded from this present study. Brief intervention alone has limited effectiveness for those patients with more severe alcohol problems. These individuals will require more intensive treatment (Knox, Hasin, Larson, & Kranzler, 2019). Approximately 9% of patients screened for alcohol use drink excessively daily and fall into the category of alcohol users that would require a referral for treatment (NIAAA, 2019).

**Readiness to change.** Often, readiness to change is not assessed, and individuals are simply told by their provider or other clinical staff they must quit drinking, or their drinking will lead to their demise. Instruments relating to the Transtheoretical Model used to assess readiness
to change have been developed for use by clinicians as a standardized way to assess individual readiness to change. Individuals are given full autonomy to honestly inform the clinician of their current readiness to change. This initial assessment allows the clinician to intervene appropriately, based on individual responses (Felicíssimo, Barros, Pereira, Rocha, & Lourenco, 2014).

Readiness to change will be assessed for individuals presenting to the ED and enrolled in this present study to assess the preliminary efficacy of a nurse navigator delivered brief intervention on readiness to change as compared with the comparison group at 3-month follow-up. In this study the nurse navigators intervention and usual care will not be dependent on the participant’s readiness to change, however the participant will be asked if they would like to participate in the usual care or brief intervention if they are assessed as not ready for change using the transtheoretical model.

The BI and treatment may be dependent on the patient’s readiness to change and self-awareness of their disease (Saitz, 2015a; SAMHSA, 2014). The universal idea is that change depends on numerous factors and personal circumstances currently affecting the lives of AUD patients e.g., social environment and depression (Felicíssimo et al., 2014).

In a secondary analysis, Williams, Horton, Samet, & Saitz (2007) reported on the association between unhealthy alcohol consumption and consequences at baseline and 6-month follow-up in a primary care office. Total number of participants was 228, the average age was 44 years, 61% were male, and 60% African American. Participants were assessed for their readiness to change their alcohol consumption using a validated readiness to change questionnaire, alcohol consumption was assessed using a validated 30-day timeline follow back, and alcohol use consequences was assessed using a valid instrument that assesses occurrence and frequency of
consequences. Alcohol-related consequences (e.g., damaging relationships, not eating, car crashes, declining physical health) were reported by 68% of the participants who reported consuming 6 standard drinks (SD) per day on average. Seventy-one percent \((n = 161)\) responded that they were ready to change; of these, 73% \((n = 118)\) were in the action stage (willing to actively participating in their sobriety), and 27% \((n = 43)\) were in the contemplation stage (open to cut down or abstain from alcohol). The mean scores for confidence in changing, importance of changing and readiness to change on a 1-10 scale were 8.00 \((s = 2.56)\), 6.00 \((s = 3.61)\), and 5.10 \((s = 3.19)\) respectively. The mean scores for intention to cut down and intention to abstain on a 1-5 scale were 3.43 \((s = 1.05)\) and 2.62 \((s = 1.09)\) respectively. Mean scores for stages of change increased through the stages of change from precontemplation to action \((p < 0.0001)\).

Additionally, readiness to change, importance of changing, and intention to cut down/abstain were positively correlated \((p < 0.05)\). Baseline readiness to change drinking and subsequent alcohol consumption and consequences at 6-month follow-up were reported. Both confidence in ability to change drinking habits (on a 1-10 scale) and intention to abstain (on a 1-5 scale) were significantly associated with fewer heavy drinking episode amounts at 6 months follow-up for confidence \((\text{Adjusted Odds Ratio} \ [AOR] = 0.88, 95\% \text{ CI} [0.80, 0.98])\) and for intention to abstain \((AOR = 0.79, 95\% \text{ CI} [0.64, 0.98], p \leq 0.05)\). Additionally, decreased risky consumption was assessed with confidence \((AOR = 0.89, 95\% \text{ CI} [0.79, 1.00])\) and for intention to abstain \((AOR = 0.78, 95\% \text{ CI} [0.62, 0.98], p \leq 0.05)\). Furthermore, intention to abstain was associated with increased abstinence \((AOR = 1.43, 95\% \text{ CI} [1.09, 1.88])\). Also, this confidence was associated with less alcohol-related consequences (e.g., harm to physical health, money problems, family being hurt, car crash while drinking; \(AOR = 0.88, 95\% \text{ CI} [0.79, 0.98], p \leq 0.05\)). Finally readiness to change \((AOR = 1.15, 95\% \text{ CI} [1.04-1.27])\), importance of changing \((AOR = 1.13,\)
95% CI [1.01-1.27]), and intention to cut down \((AOR = 1.58, 95\% \text{ CI} [1.12, 2.22])\) were associated with positive consequences at follow-up \((p < 0.05)\). The study characteristics showed that 68% of the participants had reported previous consequences related to their alcohol use. This could have accounted for an increase in readiness at baseline, with higher consequences at follow-up possibly being due to low self-efficacy that things would not get better and lower self-perception of their ability to change.

In a secondary data analysis of an alcohol skills training program among 84 Mexican American college students, Skewes et al. (2011) reviewed the relationship between drinking, alcohol-related consequences, and readiness to change. The sample was randomized into two groups. One intervention group was given a manual to read and told to return at 3 months and 12 months for re-assessment. The other intervention group was given a manual and attended two educational peer-lead workshops. About half of the sample was male (57%), mean age 20.4, and mean weekly alcohol consumption was 35 SD. The researchers utilized the 12 item Readiness to Change Questionnaire, that measured which stage of readiness to change the student were in, precontemplation, contemplation, and action. Results indicated that baseline drinking was positively associated with post-intervention alcohol consumption \((r = .60, p < .001)\), baseline readiness to change \(r(.29), p = .008\), and with baseline consequences (poor school performance) \((r = .24, p = .026)\). In addition, there was a positive correlation between baseline consequences, readiness to change at baseline \((r = .41), p < .001\), and between baseline consequences and follow-up drinking \((r = .34, p = .002)\). Greater consumption of alcohol and greater drinking-related consequences at baseline was associated with greater readiness at baseline \((\beta = .68, p < .001)\). Also, weekly drinking at baseline predicted weekly drinking at follow-up \((\beta = .60, p < .001)\). These baseline predictors (i.e., weekly drinking, consequences) accounted for 20.4% of
the variance in baseline readiness to change scores ($r^2 = .204, p < .001$). Higher readiness to change scores along with drinking consequences at baseline was correlated with less consumption of alcohol at follow-up among the heaviest drinkers. These findings could be associated with greater motivation to decrease alcohol use among the heavier drinkers and therefore more effort and attention being placed into following advice and materials provided. Additionally, those who drank less may have not felt the urgency and/or may have not felt that they needed to cut down on their drinking. The heaviest drinkers decreased their volume at follow-up more than those who drank less at baseline however, they continued to drink more in volume at follow-up (from 60 SD to 35 SD vs. from 9 SD to 20 SD).

In a secondary data analysis, Korcha et al. (2012) examined longitudinal relationships among individual’s readiness to change drinking patterns, and alcohol consumption for at risk and dependent drinkers utilizing SBIRT. The study participants ($N = 299$), predominantly male (85%) and under the age of 30, were randomized into an intervention and control group. The ED staff were trained and provided the brief intervention utilizing an alcohol dependence instrument and a readiness to change ruler. The intervention group participants ($n = 152$) were provided a 10-15-minute SBIRT session. The control group participants ($n = 147$) were screened for alcohol use only. Baseline data results indicated that most of the patients from both groups (162, 54%) were not ready to change their drinking habits, some were unsure (72, 24%), and a smaller portion (65, 22%), were ready for change. Alcohol dependence was significantly lower for the group that was not ready to change as compared to the unsure and ready ($p \leq 0.05$). Results indicated that the number of drinks from baseline to 3-month follow-up for those patients in the intervention groups who were ready to change their drinking habits and those who were unsure about changing their drinking behaviors, significantly decreased for the number of drinks
consumed on a single occasion \( (p \leq 0.01) \). Additionally, those groups who were ready and unsure significantly decreased the usual number of drinks in one sitting from baseline, compared to the group who were not ready to change at baseline and at 3 months \( (p \leq 0.01) \).

According to the U.S. Surgeon General’s report (SAMHSA & Office of the Surgeon General, 2016), the brain may take a while to return to health following a long period of heavy alcohol use, the risk of relapse is high at first, this could be a reason some participants did not follow-up. The report goes on to say, it can take a year of abstinence before an individual may be healthier and it can take 4 to 5 years of abstinence for the risk of relapse to drop below 15%.

Additionally, the individual must make significant life changes, such as finding a new job, friends, and a support system.

Support for SBIRT in the ED, the cost effectiveness of SBIRT in the ED and on society, and the importance of a 3-month follow-up are all discussed in this next section.

**Support for SBIRT in ED**

SBIRT has gained increased support in the ED, a department where physicians and staff are known to be extremely busy. A Healthy People 2020 goal is to reduce substance abuse to protect the health, safety, and quality of life for all individuals (Healthy People 2020, 2016).

In a study using SBIRT with ED trauma patients, Cunningham et al. (2010) surveyed 203 ED directors nationally who reported having an average census of 55,000 ED visits per year. On average, a blood alcohol concentration was used to screen for alcohol misuse 64% of the time, followed by CAGE survey (cut-annoyed-guilty-eye; 21%), AUDIT (3%), and other instruments (12%). Findings from the survey revealed that only 3% of those surveyed used a standardized approach to screen for alcohol use. Further, a non-standardized brief intervention physician counseling admonishment caution approach was used (33%), followed by a handout with
resources (17%); only 9% of staff had any formal SBIRT training. Overall, ED directors were positive about providing SBIRT to ED injured patients, with 65% of directors supporting screening patients and 70% supporting brief intervention. In addition, ED directors (55%) supported SBIRT for all ED patients with identified AUD regardless of injury. Perceived barriers reported by ED directors to utilizing a standardized SBIRT approach for decreasing alcohol use, included lack of provider time to spend with the patient (83%), financing their own personnel to provide SBIRT (55%), lack of knowledge of SBIRT intervention techniques (45%), financial resources to provide training for SBIRT (38%), and lack of knowledge of valid screening tools (34.5%).

As mentioned previously in a study by Babor et al. (2017), when using SBIRT by 76 providers performing 388 services in the ED setting, with motivational interviewing 61% of the time (e.g., empathy, feedback, self-efficacy) heavy drinking declined by 72% and with greater utilization of SBIRT substance use was shown to decrease. In addition, screening was estimated to take little time (1 min 19 sec - 4 min 28 sec) and brief intervention (6 min 51 sec). Furthermore, SBIRT implementation was associated with improved equity to access for services for those who suffer from health disparities, efficiency such as continuity of care from ED to an outpatient specialty service and economy or cost savings utilizing an evidence-based program with resources available.

Knox et al. (2019) conducted a review of the literature from 2010 to 2020, they reported that health care providers across a variety of clinical settings have provided SBIRT effectively. BI has been shown to be effective in multiple studies in assisting with alcohol use reduction. In the ED, SBIRT services have shown to reduce alcohol use significantly up to 1 year (Pringle et al., 2018). Barata et al. (2017) conducted a systematic review of studies conducted in the ED
using SBIRT for AUD from 1966 to 2016, 13 studies reported a significant reduction in alcohol use in the intervention group, 16 studies reported a decrease in alcohol use in both intervention and comparison groups, with nine showing greater improvement in the BI group. Seventeen studies did not demonstrate effectiveness of the BI in the primary outcome of decreasing alcohol use. Multiple staff were used for interventions including physicians, medical students, mid-level providers, nurses, social workers, psychologists, community outreach workers, and health promotion advocates. When the ED was busy, nurses were less fully engaged implementing SBIRT. SBIRT has also be used in trauma centers, with hospitalized patients, and in primary care clinical, however these articles were not reviewed since these settings were not the focus of this current study.

**Cost Effectiveness: SBIRT in the ED**

In a pragmatic naturalistic design, a cost-effective analysis of SBIRT delivery conducted by Barbosa et al. (2015) engaged a sample of 9,835 ED patients. The researchers compared the delivery of SBIRT in an ED and in an outpatient department at baseline to 6 months reviewing cost effectiveness of SBIRT delivery. When compared to patients in the outpatient services, patients in the ED were significantly older on average, (37 years vs. 31 years, \( p < 0.001 \)), were more likely to be male (61% vs. 54%, \( p < 0.001 \)), used alcohol in last 30 days (75% vs. 62%, \( p < 0.001 \)), and reported more use of both alcohol and other substances in past 30 days (29% vs. 27%, \( p = 0.04 \)). Per patient, the cost of SBIRT was less in the ED as compared to the outpatient setting (\( M = $12.81, s = $32.70 \) vs. \( M = $21.45, s = $33.06 \), respectively). Social costs as a result of AUD (e.g., nights spent in jail, criminal justice costs, absence from work) were calculated after SBIRT delivery and the greatest cost-effective change on average involved individuals who were diagnosed with AUD at baseline, but at follow-up, were no longer at risk.
for AUD. The cost savings of those individuals who use to drink heavily (5+ SD in one sitting) and who no longer were heavy drinkers was $544.55 per patient in the ED as compared $239.39 per patient in the outpatient setting. When looking at cost from a societal perspective, the ED is an optimal place to provide SBIRT because the higher costs of the ED are offset by lower societal costs such as less criminal activity, fewer car crashes, and lost income.

**Follow-Up**

A retrospective nested cohort study carried out by Leontieva and colleagues (2009) used SBIRT, AUDIT, and the stages of change questionnaire for screening purposes. The setting, at a university hospital ED, included patients from 18 to 39 years of age. Patients were contacted for follow-up after 3 months. Counselors were utilized to screen patients for risky drinking behaviors; 1,617 patients screened positive for risky drinking, of which 940 (58%) were contacted for follow-up. Out of 940 patients, a total of 810 (86%) patients reported that they had continued to consume alcohol. AUDIT scores above 5 were considered positive for AUD risk. AUDIT increased for 105 (13%) of these individuals, 50 (6%) stayed the same, and 655 (81%) had lower AUDIT scores than at baseline. Results indicated that there were significant differences between mean baseline AUDIT scores of those who were contacted for follow-up (11.4 ± 5.1) vs. those who were not contacted for follow-up (12.4 ± 6.9, p < .05). Individuals who were followed at 3 months after receiving SBIRT reported less physiological and psychological problems and less risky behavior when consuming alcohol than their counterparts who were lost to follow-up. Sociodemographic characteristics of those who followed up were: younger (22 years, p < .001); female (43%, p = .01); in college (64%, p < .001); living with others (78%, p = .03; Leontieva et al., 2009).
Strengths and Weaknesses of the Studies

The literature presented in this study focused on patients with AUD, the concept of readiness to change, the effectiveness of the SBIRT model, and the cost effectiveness of SBIRT delivery. Most of the studies were carried out in EDs and a few in primary care provider’s offices in the United States and other countries in both English and Spanish. The strengths and weaknesses of the researchers’ methodological approaches in the previously mentioned studies will be discussed here.

**Strengths.** The strengths of the studies included utilization of the evidence based SBIRT model to assist in early screening, identification, intervention, and referral for treatment for those individuals at risk or with AUD. In addition, utilization of reliable and valid instruments were used to screen and measure consumption of alcohol in individuals with AUD i.e., measuring standard drink using the NIAAA guideline screener to assess consumption, the AUDIT/AUDIT-C to identify hazardous drinking that may place the patient at risk for AUD, blood alcohol biomarkers to measure alcohol concentration, and finally, timeline follow back to assist in tracking consumption at baseline and for comparison at follow-up. Most of the research designs included and compared both men and women’s alcohol consumption; these comparisons were reported at baseline and anywhere from 3 months to 12-months follow-up. A higher percentage of men as compared to women on average were reported as participants in most of the studies. A handful of studies cited in the literature reported randomized control trial designs and reported a decrease in alcohol consumption after a brief intervention. In a randomized control trial, Field and Caetano (2010) compared brief motivational interviewing and treatment as usual in a trauma center for injured patients with alcohol dependence. In a randomized control trial, D’Onofrio et al. (2012) evaluated the efficacy of a brief intervention in the ED with emergency practitioners,
the researchers reported that the brief intervention without a 3-month booster call by nurses was as effective alone on decreasing alcohol consumption. In a cluster randomized control trial carried out by ED staff, Drummond et al. (2014) conducted a pragmatic study of alcohol screening and BI at several EDs in England. Three different alcohol interventions with three intensities and complexities were carried out. No statistical differences were noted however, the researchers reported that it may be difficult to implement SBIRT in the ED without external support from staff who specialize in AUD however, simple screening followed by simple clinical feedback and an alcohol information pamphlet may be all that is needed. Babor et al. (2017) evaluated a cross-site assessment of a national SBIRT program funded by SAMHSA and reported the effectiveness of brief intervention with multiple substances, including alcohol, using substance use specialists (heavy drinking decline = 72%, drug use decline = 80%). The researchers reported that that brief intervention was the most cost-effective intervention for alcohol misuse in primary care, and when compared to brief treatment, brief intervention was more cost effective.

Non-physicians such as psychologists, advanced practice nurses, staff RNs, social workers, counselors, and research assistance, were used in different studies to evaluate the effectiveness of brief intervention. The findings supported the use of non-physicians to perform a brief intervention. Furthermore, brief intervention is also theory-based incorporating motivational interviewing components, self-efficacy, consciousness raising, and decisional balance which allows the patient to develop self-awareness of how their drinking is not aligned with what they value. This self-reliance can assist in increasing motivation to change the individuals drinking behaviors. Motivational interviewing uses empathy and support allowing patients to think about and resolve uncertainty about change (Aronson, 2015). The clinician
should listen rather than give advice, ask permission to add any suggestions, and restate what the patient has shared (Ingersoll, 2015). Motivational interviewing has been shown to decrease alcohol use up to 6-months when compared to screening only and no motivational interviewing (Field & Caetano, 2010). The two decisional balance measures, called pros and the cons, are critical constructs in the Transtheoretical Model. Consciousness-raising involves staff gaining knowledge related to what the individual perceives are the causes and consequences of the problem and the seriousness and severity of the disease. With knowledge of consequences, various therapies can be explored, and focusing on feedback and education are essential (Prochaska & Velicer, 1997; Prochaska, Redding et al., 2008).

**Weakness.** All the studies reported sample sizes, however few reported power analyses or commented on adequacy of sample size unless they were categorized as randomized control trials. The literature on early identification of AUD using SBIRT as an intervention were mainly non-randomized studies, only a few reported randomized control trial designs discussed previously. Additionally, one study reported on a secondary analysis and another a meta-analysis of studies that used randomized control trials. In a secondary analysis, of a randomized control trial Williams et al. (2007) reported the association between unhealthy alcohol consumption and consequences to readiness to change at baseline and 6-month follow-up in a primary care office. In a meta-analysis, of seven studies offering support for the benefits of providing SBIRT by non-physicians Sullivan et al. (2011) reported on the effectiveness of the delivery of SBIRT by non-physicians.

Regrettably, studies that lacked the randomization design could not report direct causation between the brief intervention or motivational interviewing and the behavioral change. This current pilot study is the initial step in planning and justification for a randomized
controlled trial to be conducted based on the results of this pilot study for analyzing the effectiveness of SBIRT using nurse navigators for at risk AUD patients in the ED. Most studies assessed the stage of change but did not match an intervention to the targeted treatment based on the stages of change (Felicissimo et al., 2014).

**Controversial Findings in the Literature**

Further studies are needed to evaluate the effectiveness of non-physician interventions on reduction of risk for AUD (Sullivan et al., 2011). Furthermore, the lack of time for the provider and staff to spend with the patient to provide SBIRT, and the lack of knowledge of valid screening tools available, coupled with the lack of finances to support the process were hindrances (Cunningham et al., 2010). In addition, there is controversy of whether individuals in crisis are more open to feedback when they are in crisis. Because of the participants openness during crisis, does this openness make the ED or the hospital the best place to provide a brief intervention compared to providing the patient with phone numbers for alcohol treatment facilities?

Barata et al. (2017) reported that SBIRT is just as effective as more intensive costly treatments and although the intervention was more than usually offered at baseline from most providers, it should have been included in all patient encounters that might be at risk for AUD. In a secondary analysis of the literature, Williams et al. (2007) reported that readiness to change did not predict follow-up alcohol consumption or consequences with patients in primary care, whereas studies with hospitalized patients found that the individual’s stage of change was a significant predictor of reduced alcohol consumption at follow-up. In a review of the literature, McCambridge and Saitz (2017) questioned the effectiveness of brief intervention to prevent harm for those with heavy alcohol use. The researchers reported that many patients might not see
the importance of a brief intervention, especially if they did not regard their drinking as a problem. The evidence on effectiveness was weak and the studies might not be generalizable to the real world of practice. Additionally, the results of the effectiveness of brief intervention were controversial, in some studies benefits of the intervention were seen, while in other studies there were no benefits. Furthermore, the researchers felt that effectiveness inferences were not assured and that their readers should consider brief intervention trials as examining efficacy. The researchers reported that brief intervention was expected to be short-lived with short-term effects that could be beneficial and cost effective. In addition, the effects of brief intervention outcomes were not focused enough on injuries, illness, or the use of health care for follow-up. Variability in effects by age, severity of the problem, ethnicity, health biases, and generalizable to other health care settings was lacking. Some of the suggestion were to treat AUD like hypertension and, if brief intervention did not work, to start medication treatment on the patient. Additionally, there was need for more clarity of unmet needs of individuals with AUD and about management of alcohol. Screening for and preventing alcohol use should not be in isolation; other health problems, risky behaviors, and mental health should be included. Finally, BI should be as brief as needed to assist the individual to reduce consumption and avoid or reduce the consequences of alcohol use.

**Non-Physician Support**

A meta-analysis of seven intervention studies offered support for the benefit of SBIRT by non-physicians (nurse practitioners, medical doctors working with RNs), RNs, health educators, and psychologists) as compared to solely physicians to reduce alcohol consumption in the United States, the Netherlands, and the United Kingdom in primary care provider clinics (Sullivan et al., 2011). The seven studies were all intervention studies with control groups; intervention
participants were provided five brief-advice sessions (90-minute) vs. usual care for the control groups. Additionally, all groups were contacted for follow-up anywhere from 3 months to 3 years. The sample included 1,028 individuals in the intervention groups and 1,182 in the control groups. Findings from all seven studies revealed a decrease in mean SD per week (1.7) in the intervention groups as compared to the control groups (95% CI [-0.03, -3.5], p = 0.054). The effect size for the number of drinks per week decreased by 1.4 SD (95% CI [.3, -2.4], p = .012. These findings support the use of non-physician personnel to conduct SBIRT for individuals who consume alcohol in excess. Non-physicians (nurse practitioners, health educators, psychologists) are underutilized in providing SBIRT for patients with AUD. Additional studies may be needed to further evaluate the important contribution non-physician interventions can have on the reduction of risk for AUD and to provide answers as to which non-physicians should be providing the intervention (Sullivan et al., 2011).

Wamsley et al. (2018) conducted a review of the literature to assess the effectiveness of SBIRT and reported nurses were effective educators that could provide brief advice, were health promoters, and disease preventionist. They are trustworthy and provide therapeutic communication.

Multiple studies have shown that decreasing a patient’s risk for AUD reduces ED visits, injuries, and hospitalizations, and saves money (SAMHSA, 2014). Because nurses are the first professional health care providers that patients encounter, the nurse navigator would be an appropriate staff member to conduct SBIRT in the ED.

**Major Observations**

Men, when compared to women, in multiple research studies consumed higher levels of alcohol at baseline and at follow-up post SBIRT. In addition, they were at higher risk for AUD,
had more drinking days, spent more time drinking and binge drinking at baseline. Additionally, men presented to the ED with more complications related to alcohol and screened positive for AUD on more occasions than women (Akin et al., 2015; Field & Caetano, 2010; Lotfipour et al., 2013; Trillo et al., 2012). Furthermore, when compared to females, being male was a stronger predictor (6X more likely) of being at risk for AUD (Mattisson et al., 2014).

Overall, SBIRT was effective in assisting both men and women identified at baseline with AUD to decrease their alcohol consumption when compared to usual care, at 6- and 12-month follow-up to below the recommended NIAAA guidelines (Field & Caetano, 2010; Sullivan et al., 2011). Furthermore, the research showed that the effectiveness of SBIRT was dependent on valid and reliable screening tools and interventions based on the setting, age, and gender of the individual. Two examples included the AUDIT-C (Meneses-Gaya et al., 2010; Smith, 2013) and a brief intervention that was dependent on the individual’s readiness to change (Felicíssimo et al., 2014; Field & Caetano, 2010). There has been a upward trend in the rates of individuals presenting to the ED for alcohol-related injuries or illnesses; the odds of an individual presenting to the ED for alcohol-related injuries or illnesses doubled from 1995 to 2010 (OR = 2.36, 95% CI [5.0%, 9.7%], p < .05; Cherpitel & Ye, 2012; Cherpitel, Ye, & Kerr, 2018).

According to Pedersen and Hack (2010), a nurse navigator possessed various characteristics found in the literature: (a) knowledge to assist the individual to gain timely access to the care available, (b) patient advocacy offering education and emotional support over time, and (c) reduced anxiety while providing information and including the patient in their care. Additionally, Campbell et al. (2010) and Wagner et al. (2014) reported characteristics of the nurse navigator frequently mentioned in the literature. The nurse navigator was reported as being
a cost saver; a coordinator of care in a fragmented system; an eliminator of barriers to care; one who includes patients in their own care; culturally competent; and a dispeller of fear. Furthermore, Phillips et al., (2019) reported that a nurse navigator can save millions to an organization that implements a program using them to assist the patient to access care and for follow-up.

Nurses have negative perceptions of caring for and providing care to patients with AUD and some feel this is not in their scope of practice and that it may even compromise the patient-provider relationship (Broyles, Kraemer et al., 2013a; Freeman, Roche, Williamson, & Pidd, 2011). The current health care workforce lacks professionals trained in addiction medicine and in the delivery of SBIRT; this is a barrier to expanding the needed medical capacity under the Affordable Care Act to increase access to treatment for AUD (Ghitza & Tai, 2014).

Another observation that emerged in the literature was the link between AUD, depression and being male. Boschloo et al. (2011) reported that being male was a significant risk factor for AUD in individuals with a lifetime of anxiety and/or with a depressive disorder. In addition, in groups of males with AUD in the past 12 months, and having major depressive disorder was significantly associated with more days drinking at home alone when compared to males without major depressive disorder (Cranford, Nolen-Hoeksema, & Zucker, 2011). Furthermore, males with depression scored significantly higher on the AUDIT compared to the general male population; AUDIT results were significantly higher in the depressed sample group compared to the general population (Ahlin et al., 2015).

Age at which alcohol consumption began (≤ 21 years) and age of AUD during recurrence of major depressive disorder was a significant predictor of relapse. Additionally, those who relapsed were more likely to be male, single, and less educated than those who did not relapse
Individuals, who developed dependency within 10 plus years of their first drink, also developed dependency before the age of 25 and dependency in the last year. In addition, if the individuals’ started drinking prior to the age of 14, they had 3 times the odds of experiencing two or more AUD episodes and 3 times the odds of experiencing episodes exceeding one year. An episode was defined as a period when the individual had experienced AUD symptoms, such as recovering from effects of drinking or continued drinking despite physical problems caused by drinking, after cessation or decrease in alcohol use (Hingson et al., 2006). When an individual started drinking before the age of 14 that individual was more likely to be diagnosed with AUD and relapse after either reducing or quitting drinking as opposed to someone who started drinking after the age of 14 (NIAAA, 2017).

When comparing individuals who drank before the age of 14 versus individuals who started to consume alcohol at the age of 21 or older, those who began drinking before the age of 14 were at increased risk for AUD and experienced lifetime dependency (SAMHSA, 2019). Early age drinking is predictive of past year increased drinking frequency, volume, and binge drinking (NIAAA, 2019).

**Gaps in the Literature**

AUD screening and brief intervention tools for Spanish-speaking patients were limited and should be tested and become readily accessible for future studies (Lotfipour, 2013). Lower blood alcohol concentration in studied participants and exclusion of individuals with overt intoxication may limit generalizability to those patients with mild to moderate AUD and may not capture all patients presenting to the ED. Patients with overt intoxication are usually excluded as a result of their inability to consent to a research study (Trillo et al., 2012). Further studies may be needed to assess an individual’s perception of how alcohol may be a reason for visiting the
ED. Additionally, a focus on development of a brief intervention for individuals with depression and AUD may assist with decreasing alcohol use (Indig et al., 2009).

In a qualitative study of relapse prevention, the researchers reported three themes symbolizing alcohol relapse prevention strategies that emerged from interviews with 12 participants: (a) building a supportive community (i.e., having others in recovery to recover with or deal with the same struggles); (b) meaningful activities (i.e., working, and friends and family support); and (c) a healthy mindset (i.e., ability to call a sponsor or a friend, Alcoholics Anonymous). More research was needed on the lived experience and how these themes may help others with relapse prevention (Luciano et al., 2014).

The literature has not suggested the use of nurse navigators for interventions with AUD patients; currently the literature focuses on nurse navigators in cancer care and other chronic diseases (Wagner et al., 2014). Additional empirical analysis is needed to explore the feasibility and effectiveness of the nurse navigator in the ED in providing SBIRT to patients with AUD. Additional research is needed to assess acceptability of a nurse-driven SBIRT with patients who have AUD, as recent research reported that a quarter of these individuals would not be honest with the nurse if they were questioned about their alcohol consumption (Broyles, Rosenberger et al., 2012).

The proposed study will have a non-equivalent groups quasi-experimental design and results will be useful for planning a future randomized control trial to analyze the effectiveness, acceptability, and the feasibility of a nurse led brief intervention and referral to treatment using nurse navigators.

Policies or standards of care and nursing education to address SBIRT as a nursing activity are needed at hospitals to support nurse initiation of SBIRT and to support Joint Commissions
accreditation measures (Broyles, Kraemer et al., 2013). The International Nurses Society on Addiction stands firm in the belief that nurses can help improve the lives and well-being of those affected by substance use (Clancy & Fornili, 2019). The Emergency Nurses Association (2008) support training for nurses using SBIRT for patients with AUD. Future studies may want to focus on training programs to assist in reducing missed opportunities to provide early interventions by nurses for patients who present for AUD treatment (Broyles, Gordon et al., 2013).

**Evidence-Based Research on the HBM**

The individual constructs of HBM have been studied and validated to create a model that is useful for current intervention studies conducted today. Several studies have been conducted to assess the feasibility of the HBM and its constructs in predicting behavior, but their findings have been inconsistent (Jones et al., 2015).

In a health education pre-test/post-test intervention study, Mona, Mahmoud, Amal, and Mahmoud (2014) examined the effects of implementing a brief alcohol intervention using four of the six core constructs of the HBM. These included perceived susceptibility, perceived seriousness (severity), perceived benefits, and perceived barriers. The purpose of the study was to identify the differences in the perception of these four constructs. Three 30-minute sessions were offered in which participants were introduced to the realities of alcohol abuse, such as risk for addiction, consequences to health, and recognition and management of alcohol withdrawal. The sample ($N = 57$) consisted of AUD patients who lived in an addiction center of which 32% had lived with AUD for 6 to 10 years, 51% were 31-40 years of age, 40% were never married, and 74% were employed. Overall results indicated that perceived severity and perceived benefits showed a significant improvement ($p = 0.006$, $p = 0.001$, respectively) from pre-test to two-week
post-test. Participants’ perceived severity increased post-intervention regarding the physical harms caused by addiction such as liver failure, vitamin deficiency, and infertility ($p < 0.001$). Additionally, they recognized the direct relationship between choices they made and their addiction to alcohol. Participants learned the benefits of solving problems for continued recovery from AUD for example, rewarding oneself, and keeping away from those that encourage them to drink alcohol, were important for continued recovery.

In a study exploring how the HBM constructs function, Jones et al. (2015) conducted a survey for 1 month with a sample size of 1377 individuals to assess attitudes, beliefs, and behaviors of getting H1N1 vaccination. The researchers analyzed how the HBM constructs mediate relationships either through parallel (comparable), serial (sequence), or moderated (tandem with a moderator) mediation. The survey followed an 8-month media campaign launched to increase H1N1 vaccination compliance. The median age of the sample was 34.70, 22% received the vaccine, 61% were female, 81% White, and 21% did not have insurance. The variables of education, gender, age, flu shot history, and H1N1 flu history were controlled for in the study. Individuals were given the opportunity to view two television and two radio public service announcements. Sixty-five percent had viewed at least one of the announcements previously.

Results revealed that media exposure was a significant predictor of behavior. For every media exposure, the odds of being vaccinated increased by 40% thus, those exposed to both television and radio were 80% more likely to have been vaccinated as compared to those who had not seen or heard the announcements, $p < .001$. In addition, those individuals who were younger, had more education, and had a history of either obtaining the flu shot or having contracted HINI were more likely to get vaccinated. The Parallel Mediation model in which
HBM constructs mediate between an exposure or intervention and a behavior was found to be significant. Individuals with greater exposure to public announcements, perceived fewer barriers, thus, increased their likelihood of being vaccinated, \( p < .01 \). In the Serial Mediation model, two models in which HBM constructs mediated between an exposure and behavior were found to be significant. In the first model, findings from the Jones et al. (2015) study revealed that individuals with greater exposure to announcements perceived fewer barriers and increased the likelihood of being vaccinated \( (p < .01) \). Furthermore, in the second causal model, individuals who received greater exposure to announcements perceived less barriers, and, in turn, perceived more benefits, and more benefits was positively related to being vaccinated \( (p < .01) \). The findings may be helpful in my pilot study as perceived barriers may impede the individuals’ ability to see the benefits of not drinking without cues to action to help them decrease or cease alcohol use. During the brief intervention, there will be a potential for increased exposure to information regarding the National Institute on Alcohol Abuse and Alcoholism guidelines for risky drinking, and feedback related to the individuals current drinking patterns, their illness and/or injury. The intervention may act as a cue to action to help the individual to focus on their susceptibility to alcohol-related harm, perceive fewer barriers and more benefits, therefore assisting them to decrease or cease their alcohol usage (Croff & Clapp, 2015).

**Self-efficacy.** In a study conducted to better understand abstinence, self-efficacy, and treatment outcomes in AUD, Ilgen, McKellar, and Tiet (2005) studied individuals from 15 difference treatment programs at baseline and 1-year follow-up. Results showed that individuals with higher self-efficacy reported significantly higher levels of 1-year alcohol abstinence at discharge (43%) as compared to non-abstinent individuals (26%, \( N = 2,231, \chi^2 = 59.67, p < .01 \)). Secondly, individuals who scored higher (52%) in their ability to abstain from alcohol in
stressful situations, had higher rates of abstinence as compared to individuals who scored lower (37%, \( N = 652, \chi^2 = 15.17, p < .01 \)). Lastly, individuals whose alcohol intake was less than 1 per day (39%) had significantly higher rates of abstinence as compared to individuals who consumed more than 1 drink per day (24%, \( p < .01 \)).

Substance abuse treatment programs like 12-step may enhance self-efficacy and such enhancements may help with self-efficacy and lead to positive outcomes. In another study, investigators interviewed 233 individuals and re-interviewed them at a two-year follow-up using the Mental Health Confidence Scale to measure self-efficacy. Primary substances that were used by the participants in the study were cocaine, alcohol, heroin, and marijuana. Results showed that greater affiliation with a 12-step program was significantly associated with increased self-efficacy for recovery (\( p < .01 \)). Self-efficacy for recovery was significantly associated with increased quality of life (\( p < 0.01 \); leisure time, feeling, relationships), leading to sobriety and better management of mental illness (Magura, Cleland, Vogal, Knight, & Laudet, 2007).

In a secondary analysis of 300,000 individuals, Hedden and Gfroerer (2011) analyzed data from the 2005-2009 National Survey on Drug Use and Health datasets. Outcome measures were the individuals’ perception of a need for treatment for alcohol use, illicit drug use, and/or both in the past year. The mean age of participants who needed treatment for AUD was 34.9; these participants were more likely to be male (66%), and White (71%), and never married (48%). Participants who perceived a need for treatment for alcohol were more likely widowed, divorced or separated (\( OR = 1.74, 95\% CI [1.13, 2.68] \)), had a history of arrest (\( OR = 2.40, 95\% CI [1.76, 3.29] \)), and of treatment for substance abuse (\( OR = 3.46, 95\% CI [3.46, 2.51] \)), and met five or more criteria for assessment of AUD (\( OR = 18.14, 95\% CI [11.54, 28.53] \)). The participants who needed treatment for both AUD and drug use disorder were more likely to be
male (70%), White (66%), and never married (74%). The participants who perceived a need for treatment for AUD and drug use disorder were older ($OR = 1.17$, 95% CI [1.08, 1.26]), Black ($OR = 1.80$, 95% CI [1.21, 2.67]), had a history of arrest ($OR = 2.20$, 95% CI [1.49, 2.74]), a history of substance use disorder treatment ($OR = 2.50$, 95% CI [1.83, 3.41]), met five or more criteria for assessment of SUD ($OR = 8.99$, 95% CI [3.65, 22.13]) and had more than two drug-related symptoms ($OR = 4.43$, 95% CI [1.54, 12.79]). These participants were more likely to have used pain medications in the past year ($OR = 1.42$, 95% CI [1.04, 1.93]), cocaine ($OR = 2.21$, 95% CI [1.62, 3.00]), marijuana ($OR = 0.57$, 95% CI [0.42, 0.76]), or stimulants ($OR = 2.36$, 95% CI [1.51, 3.68]). The researchers concluded that most patients who need treatment for AUD and/or substance use disorder did not perceive the need for treatment, thus, were not receiving any. The Hedden & Gfroerer (2011) study highlighted elements that may influence an individual’s perception of the need for treatment, thus, SBIRT would be one way to facilitate early screening and provide a brief intervention that may assist individuals who are younger and those with fewer criteria for AUD to recognize the need for treatment.

**Transtheoretical Model Evidence-Based Research**

The Transtheoretical Model has both credibility and predictability for alcohol use research; the concepts and variables have been tested and a measurable tool has been developed and tested. The theory has also been empirically examined for over 30 years with a variety of behavioral challenges. Various researchers have investigated the stages of change, the process of change, decisional balances, and self-efficacy (DiClemente et al., 1991). The theory has been used to test propositions and interpret findings. Assumptions have been considered when designing methodology. Clearly, not all individuals are ready for change, which is important when planning interventions for behavior change. The Transtheoretical Model has been built on
research and continues to be investigated (Baumann, Gaertner, Schnuerer, & Bischof, 2013; Kortrijk et al., 2013; Leontieva et al., 2005).

In a secondary analysis based on data from a randomized control Trial of Proactive Alcohol interventions among job-seekers, Baumann et al. (2013) investigated how the Transtheoretical Model measures work with individuals who reported unhealthy alcohol use characterized by low readiness to change. The sample was randomized into three groups: 422 individuals were randomized into a control group, 427 into a stage-based intervention where individuals received interventions based on their self-reported stage of change, and 433 into the non-stage-based intervention. Ages ranged from 18-64 years old. The Alcohol Decisional Balance Scale was used to assess the decisional balance of the pros and cons of the Transtheoretical Model. The Alcohol Abstinence Self-Efficacy scales were used to assess self-efficacy in abstaining and temptation to drink, while the Process of Change Scale was used to assess the behavior change processes in treatment of alcoholism.

The researchers reported that 78% of the individuals were unaware of their drinking habits, and therefore had no intention of changing them. Most individuals in the precontemplation stages had relatively low levels of alcohol use as compared to the other stages of change. For the Alcohol Decisional Balance Scale, Cronbach’s alpha was lower for cons of drinking ($\alpha = .64$) than for pros of drinking ($\alpha = .78$). The individual in the precontemplation stage significantly perceived pros and cons as less important than the individual in the contemplation stage ($3.20 - 5.64$) and cons as less important than the individuals in the action stage ($4.50; 3.54$). The individuals in the contemplation stage rated pros as significantly more important than those in action stage ($-3.41; -2.76$). The researchers discussed the importance of enhancing the perception of the cons of drinking verses reducing the importance of the pros of
unhealthy drinking. Self-efficacy to stop drinking was significantly greater in the precontemplation stage compared to individuals in the contemplation stage (-2.69; -3.42). Individuals in the contemplation stage reported significantly lower confidence to stop drinking compared to individuals in action stage (2.48; 2.21; 2.28). Processes of change were used significantly less frequently for individuals in precontemplation when compared to individuals in contemplation (3.33 – 6.77) or in action (2.53 – 7.14).

Connors, Di Clemente, Velasquez, & Donovan (2013) characterized individuals in the precontemplation stage as lacking unawareness of the dangers that come with alcohol use, thus, may not have been thinking about pros and cons of drinking. They reported that individuals in action stage scored higher in processes of change as compared to individuals in precontemplation and contemplation stages. The individuals in the action stage are determined to change their alcohol consumption behavior, they are committed to these changes, and are taking action to effect the changes they have set out to achieve (Connors et al., 2013). Individuals in contemplation used cognitive-affective (-2.12) and behavioral processes (1.97) significantly more frequently than individuals in the action stage of change. The individuals in the contemplation stage of change are often balancing the risks and benefits with advantages and disadvantages of their alcohol use. They seek to achieve control over their AUD through cognitive reappraisal.

After a year of assertive community treatment, 47% of the participants transitioned out of the precontemplation Stages of Change for treatment of psychiatric symptoms and 38% (58 out of 152) for substance use. Those who transitioned out of the precontemplation Stages of Change for treatment of psychiatric symptoms and for substance use had greater improvements in psychological functioning related to aggression, drinking, hallucinations, and other psychological
symptoms. They also made greater improvements in health and social needs such as accommodation, food, self-care and money (p < 0.05). The researchers shared that one of the reasons for these findings may be that an individual would have a harder time moving out of precontemplation for substance abuse if their psychiatric condition was not addressed first (Connor et al., 2013).

In a study lead by Velicer, Brick, Fava, and Prochaska (2013), over 2,400 smokers were recruited with a mean age of 38 years, 95% of whom were White and 56% female. Thirty-seven percent of the participants were classified into the precontemplation group, 45% into contemplation, and 18% into preparation. Pros and cons were measured using the decisional balance inventory. Three studies were performed comparing three stages, precontemplation, contemplation, and preparation. These studies analyzed predicted effect sizes for stages of change and decisional balance (pros and cons) at 12 months compared to baseline. If an individual has not moved into action or maintenance from precontemplation or contemplation, and is still exhibiting past behaviors, for example drinking, thus, no difference in level of change would be expected and no effect is seen.

**Study 1 Precontemplation stage.** (a) When comparing precontemplators who stayed in precontemplation verses precontemplators who moved to contemplation, there was no effect when looking at pros and cons of smoking cessation. These results are expected, as the past behavior will continue in these stages and therefore no difference in level of change would be expected. (b) When comparing precontemplators who moved to contemplation verses precontemplators who moved to preparation, there was no effect when looking at pros and cons of smoking cessation. (c) When comparing precontemplators who stayed in precontemplation and were smoking verses precontemplators who stayed in precontemplation and were not
smoking, there was a moderate to large effect size (0.06 and 0.16) for pros and cons of smoking cessation (Velicer, Brick et al., 2013).

**Study 2 Contemplation stage.** (a) When comparing contemplators who regressed back to precontemplation verses contemplators who remained in contemplation, there was no effect when looking at pros and cons of smoking cessation. (b) When comparing contemplators who remained in contemplation verses contemplators who progressed to preparation, action, or maintenance, there was no effect when looking at pros and a moderate effect for cons (0.06). (c) When comparing contemplators who stayed in contemplation verses contemplators who moved to action or maintenance, there was a large effect size for pros (0.16) and a moderate effect size for cons (0.06; Velicer, Brick et al., 2013). The pros must increase twice as much as cons, thus, interventions for individuals in contemplation must target the pros and the cons to move forward into the stage of preparation, action, or maintenance. (Prochaska, Redding et al., 2008).

**Study 3 Preparation stage.** 1) When comparing those who regressed to precontemplation or contemplation verses those who remained in preparation, there was no effect when looking at pros and cons of smoking cessation. 2) When comparing those who stayed in preparation verses those who progressed to action or maintenance, there was no effect when looking at pros and a moderate effect for cons (Velicer, Brick et al., 2013).

This study provides some support for the Transtheoretical Model core constructs known as the stages of change, and decisional balance. Pros and cons are more important to the individual’s success as the individual progresses from precontemplation, contemplation, and preparation, to action and maintenance (Prochaska, Redding et al., 2008).

In a randomized control trial, Evers et al. (2012) reported on the effectiveness of a Transtheoretical Model behavior change computer intervention to cease use of alcohol and other
substances in middle schools. The intervention consisted of three 30-minute computer-based interventions over 3 months, with a pre-test, and one post-test at 3-months, and a second post-test at 14 months. The total sample size was 1,590 and the groups consisted of 52.6% males and 47.4% females, seventh grade was the largest group, followed by eighth, sixth, and finally ninth grade. The largest group of subjects was White (76%), African American (10%), and finally Hispanic (12%). Thirty-six percent of the students were in the precontemplation, contemplation, and preparation stages of change and 62% were in the action and maintenance stages. A majority of students had attempted alcohol use (35%) at least once. In addition, 53% of students reported using more than one substance. There was a significantly higher proportion of alcohol use among males (46%) as compared to females (40%; \( p < .001 \)). Furthermore, students in eighth grade or above (58%) used alcohol at a higher proportion as compared to sixth (29%) and seventh graders (41%; \( p < .001 \)).

Results of the intervention showed a significant proportion of current users ceasing alcohol use, and those who were previously not using remained in the action/maintenance stage of change (\( F[1,54] = 3.47, p < .01 \)). More students in the intervention group stopped using alcohol and moved into the action or maintenance stage as compared to the control group at the 3-month post-test, \( (t = 3.78, p < .01, OR = 2.70) \). No significance was seen at the 14-month post-test. The researchers reported that long-term significant maintenance for this group was a challenge and that possibly more session were indicated. The researchers believe that computer-based interventions are less costly and less demanding, thus, implementation would be feasible (Evers et al., 2012). The results in this study were similar to other more costly interventional studies.
Chapter 3: Transtheoretical and Health Belief Models

Alcohol Use Disorder (AUD) is a complex phenomenon affecting people with wide variations in age, race/ethnicity, educational attainment, income, and level of social support. Research shows that the individual at risk for AUD fares better when that individual is ready to change current drinking habits and is not suffering from depression (Ahlin et al., 2015; Leontieva et al., 2005; Lotfpour et al., 2013). The Health Belief Model (HBM) and the Transtheoretical Model form the basis for this dissertation study. The HBM posits that change depends on the individual’s psychological readiness to take action to change unhealthy behaviors, depending on the individual’s susceptibility or vulnerability to a disease (Maiman & Becker, 1974). The Transtheoretical Model is a theory of behavioral change processes that occurs in stages, rather than a single event (McKenna, 2013). The model is an integrative model of behavior change and the concepts of the model are the stages of change. The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5, 2013) proposes screening for disorders such as depression that may co-exist with substance abuse.

Health Belief Model (HBM)

The core constructs of HBM are perceived susceptibility, perceived seriousness (severity), perceived benefits, perceived barriers, cues to action, and self-efficacy. The universal idea is that change depends on the individual’s psychological readiness to take action to change unhealthy behaviors. This psychological readiness depends on many aspects such as susceptibility or vulnerability to a disease, perception of the severity of the outcome, the benefits of the preventive behavior, and the perception of little to no barriers (Maiman & Becker, 1974).

Social psychologists working for the U.S. Public Health Services introduced HBM in the 1950s (Janz, Champion, & Strecher, 2002; Maiman & Becker, 1974; Sherma, 2011). HBM was
developed in response to a failed free tuberculosis health-screening program. Rather than ask why individuals chose not to participate in the health screening behavior, the team of social psychologists investigated those who did and inquired about what motivated them to be screened. The concepts of perceived susceptibility, perceived seriousness, perceived benefits, and perceived barriers were found to be motivators to getting screened (Rosenstock, 1974).

The model was influenced by Lewin’s social psychological theory, a value expectancy theory in which the individual makes decisions based on subjective valuation, and a belief that an action would have a desired consequence (Maiman & Becker, 1974). For example, an individual’s behavior would be influenced by their desire to avoid illness or to get well and by the belief that the recommended action will achieve this. In other words, it is not the actual world, but the person’s perceptions, based on past experiences, that influence their behavior (Maiman & Becker, 1974). The original constructs to HBM were susceptibility, severity, benefits, and barriers. Later, HBM was expanded to include cues to action and self-efficacy (Hayden & Patterson, 2009; Sherma, 2011).

**The Core Constructs**

**Perceived susceptibility.** This construct is based on an individual’s belief about their susceptibility to acquiring a disease and the harm that results from participating in a particular behavior (Hayden & Patterson, 2009). Some individuals may feel more susceptible when symptoms of the disease are present and affect them physically. There are several perceptions to susceptibility: some individuals perceive no threat and therefore will continue practicing the unhealthy behavior; others believe there may be a possibility of contracting the disease, yet do not acknowledge the likelihood of such an occurrence in their life. Finally, some may believe they will contract the disease and are frightened of the possibility, thus, will cease the unhealthy
behavior (Sherma, 2011). The greater the threat, the more likely the individual will engage in an action linked to decreasing risks of contracting the disease (Hayden & Patterson, 2009).

A qualitative study conducted in the United Kingdom and lead by Orford et al. (2006) aimed to collect data using semi-structured interviews as part of pretreatment assessments of individuals participating in the alcohol treatment trial. The sample size consisted of 98 individuals from five participating alcohol treatment sites in three areas in England and Wales. A model of seeking or accepting professional help was developed as part of the study. One of the main themes related to seeking professional treatment was the perception of susceptibility to illness and that AUD was the main cause affecting their physical health. Illnesses and symptoms such as, ulcers, liver scarring, feeling weak, and stomach pain or weight loss were reasons for seeking medical advice and ceasing the use of alcohol (Orford et al., 2006).

**Perceived seriousness (severity).** This construct is based on the individual’s perception or subjective belief of the seriousness or severity of the disease and the possibility of harm (Janz et al., 2002; Sherma, 2011). The individual’s perception of the severity may be based on the individual’s belief about the difficulty of living with the disease and how day-to-day life may be affected by other potential serious consequences. This degree of awareness may also be dependent on the individual’s knowledge of the disease, including how the illness may affect one’s work productivity and/or one’s family and/or social relations (Hayden & Patterson, 2009; Sherma, 2011).

Perceived seriousness can also enlighten the individual as to the dangers and consequences if the individual continues to abuse alcohol. When susceptibility and seriousness are combined, the result is perceived threat (Hayden & Patterson, 2009). The threat can be related to contracting the disease or to recurrence. If the threat will result in serious ill effects or
death, behavior is more likely to change. The individual can perceive a threat when that person has experienced some sort of loss such as the death of a close friend of the same age with a similar drinking history. Other threats perceived by individuals who have AUD are not being a good parent, a deteriorating relationship, crashing their car, loss of dignity at work and home, and excessive drinking that ends with the individual regretting their actions (Orford et al., 2006).

**Perceived benefits.** The perceived benefit concept is based on an individual’s belief that an alternative action will decrease the individual’s susceptibility to an illness, disease, or other negative outcome (Hayden & Patterson, 2009; Sherma, 2011). The individual must believe that the action taken will be beneficial and that this action is within their reach and is realistic. Perceived benefits of not drinking, for example, may come from the belief that alcohol leads to depression or loss of one’s home or job and that cessation of drinking will be an effective alternative (Orford et al., 2006). This realization of the role alcohol plays in one’s life may be a trigger that sets the motion in action to stop drinking (Sherma, 2011).

**Perceived barriers.** Perceived barriers are negatives or obstacles the individual views as significant. The barriers to change must not be outweighed by the benefits to change (Hayden & Patterson, 2009). Carpenter (2010) reported that when the perception of barriers is lowered there is a greater likelihood of changing the behavior. Additionally, the barrier is not based on perceptions of possible future outcomes of AUD but current issues that will prevent changing the behavior. For example, the individual that perceives the barrier of having to go through alcohol withdrawal, peer pressure to drink, inconvenience of cessation of drinking as a current problem may not be thinking of cessation and a life without drinking. Jones et al. (2015) reported that benefits must be explained to the individual and understood before barriers can be addressed.
This discussion surrounding benefits allows the patient the perception of fewer barriers and thus more likely to change their behavior.

**Cues to action.** Not part of the original HBM, the construct of cues to action was added in 1988 (Rosenstock, Strecher, & Becker, 1988). Cues to action refers to a stimulus that can influence behavior either as internal cues, i.e., feeling depressed, bored, or frustrated, or through external cues, i.e., experiencing major life events, interacting with friends and family who drink alcohol, or viewing beer commercials, and physician or nurse advice (Hayden & Patterson, 2009; Jones et al., 2015). The individual’s perception of these cues, i.e., pressure from family and friends, has a major influence on an individual’s life, and may result in changing behavior (Hayden & Patterson, 2009). For an individual to be ready to act and make changes, there must be a sense of awareness of both internal and external cues that may affect readiness for change (Maiman & Becker, 1974).

**Self-efficacy.** The construct of self-efficacy was added in the 1980s. Self-Efficacy is an individual’s belief that the person can take charge of one’s own behaviors and succeed in reaching a desired goal in the present moment (Sherma, 2011). When an individual has the needed skills, along with strong coping efficacy, the individual is more apt to muster up the needed strength to resist the various situations that place that individual at high risk for substance use (Kadden & Litt, 2011).

The HBM is no longer a tool used solely for preventive measures such as screening for tuberculosis or other health related problems due to non-vaccination or medication adherence. In a review of the literature about self-efficacy, Kadden and Litt (2011) reported that a multitude of studies have shown self-efficacy to be a good predictor of treatment outcome. For example, individuals with increased self-efficacy following an alcohol mental health intervention
treatment were significantly more likely to maintain abstinence at 1-month, 3-months, and 6 months when compared to a control group, \( p < 0.05 \) (Romo et al., 2009). For change to occur, individual self-efficacy must be high. If they attend Alcoholics Anonymous, have a sponsor, and their friends do not drink, the individual may experience increased self-efficacy in the ability to quit drinking. The person is not likely to attempt something new unless the possibility of success is apparent (Hayden & Patterson, 2009). HBM is a robust model effective in alcohol interventions when the construct of self-efficacy is utilized (Sherma, 2011).

**Other variables.** Culture, education level, past experience, and motivation are just some of the known variables that may impact the HBM constructs (Hayden & Patterson, 2009). All variables should be considered when applying the model in intervention studies. If the individual has experienced a negative outcome, such as a car crash due to driving under the influence, there may be a heightened sense of susceptibility that may result in second thoughts about the impact of driving under the influence in the future (Orford et al., 2006).

HBM is a behavioral theory that appears to have potential for success in working with health-related behaviors. Over the years, several constructs have been added to strengthen HBM’s predictive and explanatory potential (Sherma, 2011). The model has been valuable in health education and health promotion to influence perceptions of health behaviors. (Hayden & Patterson, 2009). The HBM has been applied in health behavior studies or surveys for alcohol education, however the model has not been included in many intervention studies to modify alcohol use (Sherma, 2011).

**Summary of Core Constructs**

The success of HBM in guiding the individual to reach a goal is dependent on that person’s life experiences and on the individual responds to those experiences (Rosenstock,
1974). The individual’s perception to susceptibility and seriousness of a disease is affected by demographic, sociopsychological and structural variables, cues to action, and the individual’s perceived threat. The individual’s likelihood to change is dependent on the individual’s perception of the benefits minus the perceived barriers to preventive action. These constructs show the likelihood of the individual taking the recommended preventive health actions (Rosenstock, 1974).

Self-efficacy fits well in HBM under the heading, *Likelihood of Taking Action*, given the individual’s confidence in the individual’s ability to change behavior (Figure 3.1). HBM is a health-related action that depends on the following: sufficient motivation, belief of susceptibility to serious disease or threat, and that acting on the advice of a health care provider, would be beneficial in reducing the threat and barriers to success (Rosenstock et al., 1988). The individual must also feel self-confident for change to be effective.

*Figure 3.1. The Health Belief Model*
Multiple behavioral theories have been proposed to modify the behavior of AUD. Only a few have addressed working with the stages of change in individuals with addiction. Change involves progress through a series of cyclical changes. This process unfolds over time and involves progress and relapses through stages. The individual’s readiness to change is driven by interventions introduced by the provider. There are numerous factors and personal circumstances that affect their readiness i.e., acculturation, gender, and perception of illness. Assessing readiness respects the individual’s decisions and includes them in the plan of care. If they are not ready to change, the nurse must be understanding, be empathic, and be supportive. When providing resources, it is essential to obtain the individual’s permission. The Transtheoretical Model ensures that the health care provider continues to believe that recovery is possible, regardless of the individual’s readiness to change. The Transtheoretical Model is a theory of behavioral change processes that happen in stages, rather than a single event (McKenna, 2013). The Model is an integrative model of behavior change and the concepts of the model are the stages of change.

**The Transtheoretical Model**

The Transtheoretical Model is a middle range theory that appears to have potential for success in working with individuals with AUD. A primary reason is because the model is circular and allows for setbacks. The model was built for the individual to move toward behavior change and allows them to relapse and learn from their relapse (Figure 3.2). The core constructs are composed of the stages of change, the processes of change, decisional balance, and self-efficacy (Redding, Rossi, Rossi, Velicer, & Prochaska, 2003).
Figure 3.2. The Transtheoretical Model

There are six stages of change that signify progress and sometimes failure over time. They include precontemplation, contemplation, preparation, action, maintenance, and termination. The processes of change, decisional balance, and self-efficacy concepts serve as strategies to bring about change. The processes of change provide information for intervention plans and include consciousness-raising, dramatic relief, environmental reevaluation, self-reevaluation, social-liberation, self-liberation, helping relationships, counterconditioning, reinforcement management, and stimulus control. Decisional balance introduces self-assessment regarding the pros and cons of change and the reporting of the individual’s opinions. Self-efficacy is the degree of confidence that the individual must possess to overcome temptation (Prochaska & Velicer, 1997; Prochaska, Redding et al., 2008). The Transtheoretical Model has been adopted for interventional studies and used for research in the inpatient hospitals, emergency departments (ED), and other settings (Pro-change, 2013).
The Stages of Change

The main constructs of stages of change are precontemplation, contemplation, preparation, action, maintenance, and termination. One likely cause of an individual being at risk for AUD is drinking above the limits set by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Another likely cause is that the individual may or may not meet the guidelines set by the DSM-5 (American Psychiatric Association, 2013). Depending on the individual’s stage of change, brief motivational intervention should match the stage the individual is in, this will assist the individual to move towards a stage of intention to change for example, contemplation, preparation, and action (Heather, Hönkopp, & Smailes, 2009).

Precontemplation. These individuals have no intention to take action to change their behavior in the next 6 months. They may be uninformed about how their behavior could be causing them harm physically and/or mentally. The individuals may have attempted to change in the past and now may avoid reading, talking, or thinking about the behavior (Prochaska, 2008). Connors et al. (2013) characterized individuals in precontemplation stage as having less concern related to alcohol use because of their self-view that alcohol is not a problem. Therefore, no steps are being taken to change their consumption of alcohol use.

Contemplation. This stage exists when individuals have set as their goal for the next 6 months to decrease or cease use of alcohol. However, due to the high rate of failure, Prochaska (2008) recommended against setting goals unless there is awareness of both pros and cons or benefits and barriers. The individuals should believe there are more pros to changing their behavior than cons. Sometimes as they question the pros and cons, doubt arises, and progress is halted. When this occurs, individuals need assistance to move to the next stage (Prochaska & Velicer, 1997; Prochaska, 2008). Resolution of the problem should be the goal of contemplation.
(Prochaska, DiClemente, & Norcross, 1992). Connors et al. (2013) characterized individuals in contemplation stage as thinking about making a change in their alcohol use but not yet ready to take any action. The individual may be distressed about making any decision and will evaluate choices and try to understand their behavior. The contemplation stage can last several months to several years.

**Preparation.** In the preparation stage, individuals with AUD intend to act within the next month. Although they may have taken specific action within the last year with some degree of success and/or had a plan of action, they have not yet moved into the action stage. As a result, they grow concerned about failure and lack self-efficacy. To assuage their fears, Prochaska recommended treatment intervention that focuses on facts. He believed that at this stage, knowledge is more important than motivation because knowledge prepares the individuals for reality (Prochaska, 2008; Prochaska & Velicer, 1997). Connors et al. (2013) characterized individuals in the preparation stage as intending to change their behavior and open to planning and creating a change plan.

**Action.** When individuals have made actionable steps to decrease or abstain from alcohol within the last 6 months, they are defined as being in the action stage. These individuals may answer no to the question regarding drinking and therefore would not be considered at risk for AUD (Prochaska, 2008). They will meet exclusion criteria if they answer no to the question regarding current drinking. Characteristics of individuals in the action stage are described as individuals who have set a date to implement changing their behavior, demonstrated a firm commitment to making a change, and are compliant with suggested change strategies (Connor et al., 2013).
Leontieva et al. (2005) shared that at 3-month follow-up, individuals in the action stage of change have made actionable steps to decrease or abstain from alcohol within the last 6 months. They also were more likely to decrease risky behavior caused by excessive drinking than individuals in the contemplation stage of change. Individuals in the action stage of change have set goals for the next 6 months to decrease or cease use of alcohol.

In a study reporting the predictive validity of a readiness to change questionnaire, Heather, Rollnick, and Bell (1993) enrolled 174 males with excessive drinking (28 standard drinks/week or 11/day). Results indicated that there was a high positive correlation between how much an individual drank at baseline and at 6-month follow-up. There was a significant relationship between stage of change and reductions in drinking quantity among excessive drinkers following discharge. The individuals in the action stage significantly decreased their drinking compared to those in the precontemplation and contemplation stages (Heather, Rollnick, & Bell, 1993). These individuals may answer no to the question regarding drinking and therefore would not be considered at risk for AUD and be excluded from the study.

**Maintenance.** The goal for the individual who is in maintenance is to prevent setbacks, the person is more likely to resist temptation than previously, able to abstain from drinking and is working towards preventing relapse (Prochaska, 2008). Connor et al. (2013) characterized the individual in the maintenance stage of change as working to sustain change, avoiding relapses, fighting temptation, and living an alternative lifestyle leaving behind old behaviors. These individuals may answer no to the question regarding drinking and therefore would not be considered at risk for AUD and be excluded from the study.

**Termination.** In the termination stage, there is no temptation and total self-efficacy is evident. Behavior is automatic, and there is no perseverance regarding drinking (Prochaska,
Individuals in the termination stage may have already decided to quit; they will be excluded from the study if they answer no to the question regarding drinking.

The Processes of Change

The Process of Change guides the intervention process and assists individuals to progress from one Transtheoretical Model stage to the next. This process provides information for intervention plans, which include consciousness-raising, dramatic relief, environmental reevaluation, and self-reevaluation. Individuals who are open to the process of change progress through the stages of change smoothly, while others who are not take longer to progress. Research suggests that in the early stages of change, individuals apply cognitive, affective, and evaluative processes as they progress through the different stages. Self-reevaluation is essential in the contemplation stage (Prochaska, Redding et al., 2008).

**Consciousness-raising.** Involves staff gaining knowledge related to what the individual perceives are the causes and consequences of the problem and the seriousness and severity of the disease. With knowledge of consequences, various therapies can be explored, with feedback and education being essential (Prochaska & Velicer, 1997; Prochaska, Redding et al., 2008). Connors et al. (2013) reported that consciousness-raising involves the individual seeking information about their addictive behavior and is associated with an individual who is moving from precontemplation to contemplation stage of change. Consciousness-raising is usually seen in the earlier stage of change to assist individuals to increase their understanding that changing can be advantageous. In addition, consciousness-raising assists the individual to progress from the precontemplation to contemplation stage of change (Norcross, Krebs, & Prochaska, 2011).

**Dramatic relief.** Involves role-playing, grieving, testimonies, and success stories. Dramatic relief can be very emotional and can assist in relieving long held guilt (Prochaska &
Velicer, 1997; Prochaska, Redding et al., 2008). In addition, dramatic relief can involve emotions of fear, guilt, and regret if one does not change (Norcross et al., 2011). Connors et al. (2013) reported that dramatic relief is associated with an individual that is moving from precontemplation to contemplation stage of change.

**Environmental reevaluation.** Can involve interventions of family and friends who provide first-hand accounts about how the individual’s choices have affected them and how the individual’s drinking has affected others (Prochaska & Velicer, 1997; Prochaska, Redding et al., 2008). The individual in this process of change assesses how their behavior impacts their surroundings and is associated with an individual that is moving from precontemplation to contemplation, and contemplation to preparation stage of change. (Connor et al., 2013).

**Self-reevaluation.** This process of change is about introspection, the individual begins to recognize how differently they act and feel when under the influence compared to when the individual is not under the influence of alcohol (Prochaska & Velicer, 1997). In self-reevaluation, the individual is assisted to think about positive thoughts to help improve how they could feel about themselves if they did change (Norcross et al., 2011). Connors et al. (2013) reported that the individual in the self-reevaluation process is moving from contemplation to preparation.

**Process of change exclusions.** The five remaining processes of change (self-liberation, social liberation, counterconditioning, stimulus control, reinforcement management and helping relationships) are particularly effective for the three stages of change known as action, maintenance, and termination (Prochaska, Redding et al., 2008). These remaining five processes of change will not be a part of this study. These individuals would answer no to the question regarding drinking and therefore would not be considered at risk for AUD (Prochaska, 2008).
**Decisional Balance**

Two decisional balance measures, called pros and cons, are critical constructs in the Transtheoretical Model. An example of pro is described as an individual wanting to see a grandchild grow up and the awareness of a potential early death due to liver dysfunction (hepatitis or cirrhosis) if they continue to drink. On the other hand, an example of con is the individual’s awareness of self-loathing when they stop drinking. There are potential gains and losses as individuals move through the stages of change (Prochaska, Redding et al., 2008).

The balance between the pros and cons varies depending on the individuals’ stage of change (Prochaska, Redding et al., 2008; Velicer, Prochaska, Fava, Norman, & Redding, 1998). The pros must increase two-fold from contemplation to preparation and the cons must decrease. Therefore, interventions for individuals in contemplation must target increasing the pros in order to move forward into the stages of preparation and action. If spending time with family is a pro, the multiple benefits of the family should be emphasized. The excuses of spending time with friends who drink after work is thus decreased and should not be a barrier for the individual (Prochaska & Velicer, 1997).

**Self-Efficacy**

The concept of self-efficacy was adapted from Bandura's 1977 self-efficacy theory that individuals believe that they can perform a task and reach future goals. For example, those with AUD would believe they can handle stressful situations and triggers, and not revert back to unhealthy habits such as drinking to cope. As self-efficacy increases, temptation decreases. This is usually seen in the contemplation stage of change and continues to strengthen through the other stages. The Transtheoretical Model uses an overall confidence score as an assessment tool (Velicer, Prochaska et al., 1998). The individuals have the confidence to know that they do not
need a drink to handle stressors from pressures at work or home. They may face triggers daily and can handle those triggers when tired or depressed. Basically, they see the glass as half full, not half empty (Velicer, Prochaska et al., 1998).

The individual in the action stage needs assistance increasing their sense of self-efficacy; this is accomplished by helping them use behavioral strategies to overcome temptations to use alcohol such as coping strategies and sustain these behaviors.

**Temptation.** This concept assesses the degree of temptation individuals experience in a certain situation. A common tempting situation for individuals with AUD is craving alcohol. Craving results in difficulty with concentration and frequently results in the onset of drinking (American Psychiatric Association, 2013).

**Summary**

The Transtheoretical Model’s original author has provided a website containing tools that measure the stages of change, processes of change, decisional balance, self-efficacy, and temptation. The framework clearly guides the nurse researcher to test new hypotheses, measure concepts, design research, and implement processes that are unique to the individuals’ needs. The theory covers all areas of nursing practice and can be used in multiple areas, including the inpatient and the outpatient arenas. The Transtheoretical Model is a health promotion model, and nurses can use the concepts for health promotion and prevention. The model follows the nursing process: Assess the stages of change, plan jointly with the individual to implement the proper intervention and evaluate the effectiveness of the plan.

In precontemplation, individuals will perceive pros (benefits) and cons (barriers) as less important than those in the contemplation stage. Barriers in the precontemplation stage are less important than in the action stage. When in precontemplation, individuals lack awareness of
dangers that come with AUD, furthermore, in contemplation benefits are considered as significantly more important than in the action stage. Additionally, in the precontemplation stage self-efficacy is increased as compared to the contemplation stage, as confidence is increased to stop drinking over those in the action stage. The Processes of Change guide the intervention process and assist individuals to progress from one Transtheoretical Model stage to the next. Those individuals in the precontemplation stage are less open to the processes of change as compared to those in the contemplation stage. Additionally, individuals in the action stage are more open to the processes of change as compared to those in the precontemplation and contemplation stages. According to a recorded talk given by Prochaska (2001) on helping populations progress through stages of change, 29% of those administered SBIRT will stay in precontemplation, 45% will move to contemplation, and 27% will move into action. Furthermore, less than 20% of the population with AUD will reach the termination stage.

Most of the U.S. population does not consume alcohol (35%), 37% are at low risk for AUD, 19% are at increased risk, followed by 9% of the population at highest risk (NIAAA, 2019).

The theoretical framework in Figure 3.3 illustrates how the intervention by the nurse navigators in this study will influence variables based on the HBM and The Transtheoretical Model. Variables such as depression, demographics, and age at first exposure to alcohol influence the risks for AUD. Additionally, the delivery of brief intervention by the nurse navigator will be dependent on the patients’ consent to participate in the study.

**Depression**

Depression was measured as a primary variable because patients with higher AUDIT scores have been reported to have depression at higher rates than those with lower scores (Ahlin
et al., 2015). The motivation for including this predictive value was to assess if the patients with mild to severe depression in this study measured by the PHQ-2/9 who received the brief intervention (BI) from the nurse navigator would score lower on the depression scale at follow-up when compared to the comparison group.

The National Epidemiologic Survey on Alcohol Related Conditions III (NESARC-III) study enrolled 36,309 adults, they reported that the 12-month and lifetime prevalence of major depressive disorder were 10.4% and 20.6%, respectively, with most participants having moderate depression. Depression was measured by the NIAAA DSM-5 version of the AUD and the Associated Disabilities Interview Schedule 5. The investigators reported, major depressive disorder was associated with substance use disorder and was a substantial public health and economic burden (Hasin, et al., 2018).

Depressive disorder has been linked with multiple chronic issues including arthritis, coronary artery disease, hypertension, stroke, and a variety of chronic pain conditions which have public health significance. These conditions may increase the need for patients with a risk for AUD to self-medicate for depression with alcohol which may be a causal relationship to the chronic conditions mentioned (Kessler & Bromet, 2013). Based on these findings, it would be important to ask about depression when conducting a study on risk for AUD and assess the effectiveness of the intervention.
Figure 3.3. Framework for Nurse Navigator SBIRT Intervention
Chapter 4: Methods

This chapter describes the research methodology for the aims of this study, a pilot non-equivalent two group quasi-experimental study. It was designed to assess the preliminary effectiveness of a nurse led brief intervention to reduce alcohol consumption and dependency among individuals presenting to the Emergency Department (ED) with a risk for alcohol use disorder (AUD). Two groups were enrolled, an intervention group and a usual care comparison group. In this chapter, the following will be described: specific aims, the sample, inclusion and exclusion criteria, setting, procedures, instruments, data analysis, and human subject’s protection. This study is guided by a theoretical framework based on the Health Belief Model (HBM) and Transtheoretical Model (Maiman & Becker, 1974; Prochaska, Redding et al., 2008; Prochaska & Velicer, 1997; Rosenstock, 1974).

Specific Aims

The specific aims in this pilot quasi-experimental study will include the following:

Specific Aims 1. To assess the preliminary efficacy of a RN navigator delivered brief intervention (BI) on alcohol consumption, hazardous drinking, readiness to change alcohol use, and risk for AUD as compared with the comparison group at T2 (Time 2) 3-month follow-up.

Hypothesis 1a. The intervention group will report a significantly lower number of standard drinks on a typical day in the past 3 months than will the comparison group at T2 as measured by Item 2 on the AUDIT-C.

Hypothesis 1b. Participants in the intervention group will report that they consumed 6 or more standard drinks significantly less frequently in the past 3 months than the comparison group at T2 as measured by Item 3 on the AUDIT-C.
**Hypothesis 1c.** Participants in the intervention group will report drinking alcohol significantly less frequently in the past 3 months than the comparison group at T2 as measured by item one on the AUDIT-C.

**Hypothesis 1d.** The proportion of participants who reported hazardous drinking in the past 3 months in the intervention group will be significantly lower than the comparison group at T2 as measured by the AUDIT-C.

**Hypothesis 1e.** The intervention group will have significantly greater readiness to change to reduce alcohol use than the comparison group at T2 as measured by the readiness to change questionnaire.

**Hypothesis 1f.** The mean positive AUDIT-C scores that measure AUD risk for both men (≥ 4) and women (≥ 3) among participants in the intervention group will be statistically significantly lower than that of the AUDIT-C risk scores in the comparison group at 3-months follow-up as measured by the AUDIT-C.

**Specific Aims 2.** To assess the preliminary efficacy of a RN navigator delivered brief intervention (BI) for patients with AUD risk on depressive symptoms/feelings as compared with the comparison group at 3-months follow-up.

**Hypothesis 2a.** The mean depression scores that measure depressive symptoms/feelings among participants in the intervention group will be statistically significantly lower than that of the depression scores in the comparison group at 3-months follow-up as measured by the PHQ-9.

**Specific Aims 3.** To assess the preliminary efficacy of a RN navigator delivered BI to increase individual’s with AUD risk perceived susceptibility, perceived seriousness, perceived benefits, and to decrease perceived barriers on AUD risk, as compared with the comparison group, at 3-months follow-up.
**Hypothesis 3a.** The level of perceived susceptibility, seriousness, and perceived benefits of a risk reduction to AUD of an alternative action will be significantly higher among patients in the intervention group compared to those of those in the comparison group at 3-months follow-up as measured by the Health Belief Model Instrument – Revised (HBMI-R).

**Hypothesis 3b.** The level of perceived barriers to AUD risk will be significantly lower among participants in the intervention group than that of patients in the comparison group at 3-months follow-up as measured by the HBMI-R.

**Specific Aims 4.** To explore the feasibility of a nurse navigator delivered intervention on AUD risk and alcohol consumption at 3-month follow-up.

**AUD Risk**

Drinking that may place an individual at risk for AUD and health consequences are defined as the following.

**Daily and weekly limits.** For men at risk drinking is defined as more than 4 SD on any single day, and more than 14 standard drinks (SD) per week. For women and for persons greater than or equal to 65 years of age, regardless of gender, at risk drinking is defined as more than 3 SD on any single day, and more than seven SD per week in the past 30 days (NIAAA, 2019).

**Binge drinking.** Additionally, binge drinking places an individual at risk for AUD for men it is recognized as having 5 or more SD and for a female as having 4 or more SD, in a two-hour period, bringing blood alcohol concentration levels to the limit of 0.08 g/dl or above in the past 30 days (NIAAA, 2020).

**Heavy drinking.** Furthermore, heavy drinking places an individual at risk for AUD and is defined for both men and woman as consuming 5 or more SD on the same occasion on each of 5 or more days in the past 30 days in the past 30 days (NIAAA, 2020).
Research Methodology

**Design.** A pilot non-equivalent two group quasi-experimental design was used to assess the preliminary efficacy of screening for alcohol use and a nurse navigator delivered one-time brief intervention to decrease AUD risk and consumption of alcohol. Additionally, research was conducted to increase readiness to change, and improve health beliefs for individuals presenting to the ED with risk for AUD among those 18 years and older. This study was approval by both the University of California, Los Angeles (UCLA) and Scripps Health Care System’s Institutional Review Board (IRB) for the study.

**Sample.** The Principal Investigator (PI) screened 2,195 men and women of all races and ethnicities who presented to the ED admitting to consuming alcohol from February 2018 to August 2019. On initial visit to the ED and initial contact with the PI, individuals in this study were screened for alcohol consumption and inclusion using the electronic health record and screening consent script form approved by the IRB. See Procedure section: Screening by the ED Intake or Primary Nurse and Screening participants for eligibility. Participants who were 18 years or older and were able to comprehend and speak either English or Spanish were assessed for eligibility. On average, 50 patients a month were approached during February to August 2018 (6 months) to recruit participants in the comparison group and 158 patients a month were approached during September 2018 to August 2019 (12 months) to recruit participants in the intervention group. The comparison group was recruited prior to the intervention group to decrease potential bias. Such bias might occur if intervention and comparison conditions were conducted simultaneously and the comparison group might inadvertently be provided a BI by nurse navigators. As described later in this chapter, the nurse navigators were trained to provide the brief intervention after recruitment of participants in the comparison group. Weaknesses in
the comparison-then-intervention sequencing include: there is a possibility of different sociodemographic characteristics in intervention and comparison groups; and different enrollment periods could contain different life and contextual events that could affect the groups differently. These issues could affect outcomes and validity of results.

The study was conducted during dates and times that both the navigator and the PI were available. The PI worked full time and was only available to recruit certain hours, and only when the navigators were available. In the comparison group, most participants were recruited on Tuesday, Wednesday, and Thursday. In the intervention group, most participants were recruited on Wednesday and Friday. Some of the reasons I believe that participants were not recruited during the higher volume periods was that they had longer wait times during these periods and because this patient population tended to be placed in hallway beds, and those areas did not provide privacy for conducting the study. All the study participants were either given cash or a gift card for cash, the committee chair and I agreed that participants would be more willing to participate if they were provided with this form of compensation. This study excluded children under the age of 18 as this study was focused on adults and interventions for children require a somewhat different approach and would require permission from a parent to participate (Hulley, Cummings, Browner, Grady, & Newman, 2013).

**Attrition rate.** A total of 75 men and women were recruited to participate in the study, 37 in the intervention group and 38 in the comparison group. The intervention group had a 30% follow-up rate ($n = 11$) and the comparison group had a 45% follow-up rate ($n = 17$, Figure 5.1). These group follow-up rates are lower than in other studies, using SBIRT to decrease AUD. Madras et al. (2009) reported a 65% combined follow-up rate of six sites at 6-month follow-up for a mixed ethnic population of AUD participants. In a randomized control trial, Field and
Caetano (2010) reported a 77% follow-up rate at 6 months with a mixed ethnic population of AUD patients in a trauma center comparing brief motivational interviewing to treatment as usual. Skewes et al. (2011) reported a follow-up rate of 77% at 6-months among Hispanic college students examining readiness to change and brief intervention as a predictor of alcohol use.

**Power analysis.** Pilot studies play an important role in providing information for the planning and justification of randomized control trials and exploration of potential effect sizes (Hulley et al., 2013). This study assessed preliminary effectiveness of screening for alcohol use and a nurse navigator delivered one-time brief intervention. According to Hertzog (2008) and calculations using G*Power 3.1 (Faul, 2014), a sample size of 60 (30 individuals in each group) for a pilot study would allow detection of a medium-to-large effect size ($d = .65$) on a one-tailed independent samples $t$-test at an alpha of 0.05 and a power of 0.80.

The sample size at follow-up was 28, less than the 60 expected. Using G*Power 3.1 (Faul, 2014), with a sample size of 28, with 11 in the intervention group and 17 in the comparison group, using statistical test for comparing means of independent groups effect size, the actual sample size was sufficient to detect a large effect of .989 with 1-tailed alpha = .05, and power = .80.

The sample size should provide enough diversity of alcohol user characteristics (e.g., gender, age, ethnicity) to allow for representativeness of those with AUD. Study findings examined AUD risk, consumption, readiness to change alcohol use, and depression in the intervention group as compared to the comparison group at 3-month follow-up.

**Retention plan for participants.** The Retention plan included obtaining the participants names, phone numbers, and emails. In addition, contact information was collected for other individuals who may have been able to reach the participants if their number and email provided
were no longer in service at time of follow-up. Furthermore, monthly text messages were sent out to remind the participants that they were enrolled in a study and to update any new contact information provided at baseline as needed. If the participants did not own a phone that had texting capability, an email was obtained, and reminders were sent via email. Additionally, if the participant did not respond to either text or email after three repeated attempts for follow-up, a phone call was attempted. Lastly, payment was offered to keep the participants motivated to participate in the follow-up at 3-months.

**Inclusion criteria.** On initial contact with the PI, individuals in this study were screened for inclusion using the screening consent script form approved by the IRB. All individuals met the following criteria.

1. 18 years of age and older
2. Had the ability to understand and give informed consent
3. Comprehended the English or Spanish language
4. Followed directions and were alert and oriented to their name, place receiving service, correct date to include day, month, and/or year, and reason for ED visit (what brought them to the hospital)
5. Were identified as being at risk for AUD based on the NIAAA (2005) definition that may place an individual at risk for AUD and health consequences, in the past 30 days.
   a. Daily and weekly limits: For men at risk drinking is defined as more than 4 SD on any single day, and more than 14 SD per week. For women and for persons greater than or equal to 65 years of age, regardless of gender,
at risk drinking is defined as more than 3 SD on any single day, and more than seven SD per week in the past 30 days (NIAAA, 2019)

b. Binge drinking: Binge drinking places an individual at risk for AUD for men it is recognized as having 5 or more SD and for a female as having 4 or more SD, in a two-hour period, bringing blood alcohol concentration levels to the limit of 0.08 g/dl or above in the past 30 days (NIAAA, 2020)

c. Heavy drinking: Based on the NIAAA definition, as consuming 5 or more SD on the same occasion on each of 5 or more days in the past 30 days (NIAAA, 2020)

**Exclusion criteria.** On initial contact with the PI, individuals in this study were also screened for exclusion and were excluded based on presentation and/or by using the screening consent script form approved by the IRB. Individuals were excluded for the following reasons:

1. If in custody of any law enforcement agency, including U.S. Customs and Border Protection, consent was unobtainable

2. If they were on an involuntary psychiatric hold, as these individuals were unable to give consent

3. If they required an examination from the Sexual Assault Response Team, as physical and emotional trauma to these individuals would have been too grave at the time of their visit

4. If they were admitted to the hospital through trauma services or medicine: Any individuals admitted to the hospital with AUD or at risk for AUD are evaluated for their alcohol use by both a social worker and a substance use disorder nurse, which may affect the outcome at follow-up. Trauma services and substance use
disorder nurses provided Screening, Brief Intervention, and Referral to Treatment (SBIRT) for all inpatients with a blood alcohol concentration > 0 or who are identified with risk for AUD

5. If they presented with severe injuries such as needing surgery, having uncontrolled pain and/or bleeding, life or limb-threatening condition, or medical instability. These individuals required immediate emergency care and were admitted to the hospital

6. If they presented with mental instability, including suicidal or homicidal ideations, or visual, auditory, or tactile hallucinations. These individuals were screened by the staff on admission and evaluated by the ED psychiatric liaison team per the ED Suicide Patient or Danger to Other Supplemental Admission Orders. Therefore, unable to make sound decisions they were either bedded in a specialty suite in the ED or admitted for further treatment

7. If they were currently in treatment for any substance use disorder or enrolled in another substance use intervention study at the time of their ED visit. These individuals were receiving intervention that may affect the data at baseline and follow-up

8. If they had the smell of alcohol or if there was a suspicion of drug intoxication with the appearance of being intoxicated e.g., combative, loss of coordination, staggered gait, drowsy, slurred speech, glazed eyes, or a Glasgow Coma score <15. If their condition improved while in the ED, and the individual was deemed no longer intoxicated, the PI reassessed for inclusion once during their stay. This exclusion was for legal and ethical reasons, as intoxicated individuals could have
had impaired judgment that would have compromise their ability to consent (Aldridge & Charles, 2007)

9. If they were unwilling or unable to provide follow-up contact information for at least one person as follow-up for the purposes of this study would be difficult.

10. If they had no working phone where they could be reached and did not plan to be in the area in 3-months at the time of follow-up

11. If individuals were identified by the ED Provider as needing a referral to treatment right from the ED for example, patients sent to an inpatient rehab center directly from the ED would receive interventions for their alcohol use

12. If the ED providers asked for the patient to be excluded based on their discretion

**Setting.** The setting was in an ED located in San Diego, California, part of a larger not-for-profit health care system with five hospitals. The ED offers urgent and emergent care services and is recognized as a Level one-trauma center providing care to San Diego residents and visitors. This ED houses 49 private beds situated behind thick glass walls. The ED and the hospital are committed to subsidized care assisting low-income and uninsured patients with discounted hospital charges, charity care, and flexible billing (Scripps Health, 2016).

In fiscal year 2016, there were 56,020 visits to the ED with age groups ranging from younger than 18 years of age (3%), 18-26 years of age (17%), 27-40 years of age (26%), 41-64 years of age (39%), and 65 years old and older (15%). Visitor patient ethnicity was reported by the ED as 72% non-Hispanic and 28% Hispanic, with English (90%) being the predominant language spoken, followed by Spanish (8%), and other (2%). Government-funded health care payer types were 49% of the payee mix and included Medicare, Medical, Medical HMO, and County Medical Services (K. McCabe, personal communication, September 28, 2016).
Formative Collaboration on Proposed Study

Community Advisory Board. A 4-hour meeting with a Community Advisory Board (CAB) comprised of Scripps ED staff was held to discuss the logistics of implementing this study. The group included an ED physician, a manager, a supervisor, a nurse navigator, a clinical nurse specialist, a bedside RN, and an emergency medical technician. Study details discussed included: Defining risk for AUD, prevalence, financial impact, specific aims, and methodology. The logistics discussed were recruitment flyers, eligibility screening, consenting of participants, data collection, and 3-month follow-up plans. Usual care for patients that present to the ED with risk for AUD was also discussed. Additionally, responsibilities of the nurse navigators in terms of brief intervention to include referral to treatment.

The CAB was encouraged to provide feedback on the study to ensure feasibility and acceptability. The CAB provided valuable feedback that was incorporated in the design of this study. For example, during times of higher patient volume, the PI was cognizant of not disrupting patient flow by adding further delays. Study-related procedure did not interfere with patient care such as x-rays and lab tests. Study procedures were placed on hold and resumed once tests and exams had been completed and the patient was in the waiting mode. Lastly, the study did not interfere with the patients’ discharge.

Further, the CAB recommended conducting the study Thursday through Saturday, late afternoons, as these days and times admit higher volumes of patient with AUD risk. The CAB suggested that if the participants received a gift card for money, instead of food, that they might use it to buy alcohol. Therefore, to think about compensation in other forms of money for participation (e.g., food, bus tokens, taxi vouchers) may be provided instead.
For the PI to move forward with the present study an approval form signed by the system wide Drug and Alcohol Care line was obtained. A brief presentation to the committee was provided that included information on the magnitude of the AUD problem, the prevalence of alcohol use, the cost to our society, the specific aims, the research design, and the responsibilities of the nurse navigator and the participant follow-up details. The care line was composed of physicians (medical, psychiatry), psychiatric liaison teams (social workers, nurses, nurse practitioners, family therapists), behavioral health clinical nurse specialists, a psychiatric nurse practitioner, and Substance use disorder nurses. A majority in attendance were experts in the field of addiction and sobriety and all the members were in support of the study moving forward.

The staff and providers were informed of the study through email as well in person during the PIs ED rounds. Flyers were not posted in the ED as the study was only being conducted when the PI was present. The PI informed the staff, providers, and the navigators in person the day of, when the study was being conducted.

Lastly, the nurse navigator in the group suggested that the PI should designate an area in the study documents where they could record the length of time it took to conduct each patient intervention for feasibility tracking purposes. A tracking form was developed which provided the duration of the intervention, participants response and notes regarding the interaction. The average time it took to conduct a BI in the ED by the nurse navigators was then calculated. The CAB approved the study logistics and offered their assistance with initiating the roll out of the study.

**Readiness assessment.** The nurse navigator filled out the *SBIRT ED Readiness Assessment Checklist* obtained from the Emergency Nurses Association website (ENA, 2008). The document included information on who if anyone completes the SBIRT in the ED. The
assessment revealed that patients are referred to the nurse navigator either by the RN, MD, or as a self-referral and at times it may be driven by the patients’ request. Insurance verification is completed by the nurse navigator and the usual care is in the form of providing a pamphlet with generic drug and alcohol resources and documentation occurs in the medical record. The nurse navigators provided the referral to treatment for detox or substance abuse resources for community-based programs or private programs. The case management leadership team gave approval to utilize the nurse navigator to provide the BI.

The nurse navigators were comfortable working with individuals at risk for or who had AUD and were aware that they were frequent users of the ED and that they frequently were admitted for intoxication to the point where the nurse navigator had to wait for them to metabolize the alcohol or wait for them to be cleared for suicidal ideation. The one worry for the PI in having nurse navigators already experienced working with AUD patients would be a negative attitude or bias that the patient would never change their drinking habits and the belief that the BI would be a waste of time with some of these patients. A negative attitude is usually formed when the staff are not trained, therefore training the nurse navigators was a priority prior to providing the BI (Broyles, Kraemer et al., 2013; Mitchell et al., 2017).

Procedure

Recruitment. The study was conducted when the PI was present in the ED, days and times varied. This study aimed to recruit 100 participants to incorporate a 3-month follow-up sample size of 60 men and women into a comparison and an intervention group, in order to achieve an adequate medium effect size. Multiple difficulties were encountered during both the recruitment process and the follow-up study. A sizable group was assessed for eligibility \(n = 2,195\), many ended up not meeting the inclusion criteria \(n = 1,176\) for at risk AUD, excluded
for other reasons (713), another 227 declined to participate, and the study was stopped for four individuals. The final numbers for recruitment in this study were therefore less than the aim of 100. Baseline data were collected for both comparison and intervention groups from February 2018 to August 2019. In the end, a total of 75 patients were recruited from a trauma level one emergency department. In the comparison group, 38 participants were recruited during a 6-month period from February to August 2018. Following data collection from the comparison group, 37 participants were recruited into the intervention group, during a 12-month period from September 2018 to August 2019. During this enrollment period for the intervention group, any patients who presented to the ED for care, and required resources for AUD, received usual care by the nurse navigator when not enrolled into the intervention group. Nurse navigators were instructed to provide usual care only, to any patient who may need their services while the study was being conducted, unless otherwise informed by the PI. The PI had written documentation of those participants who had been enrolled in the study, to avoid enrolling the same individual twice and ensuring that previously enrolled participants in the comparison group did not receive an intervention.

**Follow-up.** The participants were asked what day of the week and time would work for them for the follow-up phone call. Attrition rates were high for the 3-month follow-up, 26 out of 37 (70%) in the intervention group and 21 out of 38 participants in the comparison group. Consequently, at the 3 months follow-up, data were collected from 11 participants in the intervention group from January 2019 to November 2019 and 17 participants in the comparison group from June to October 2018. Three observations were noted that explained participant attrition at 3-months. One, participant expressed that they were no longer interested in participating. Two, the participants contact information (phone, email) provided at the initial
visit was no longer valid. Three, family and friends had lost contact with the participant and therefore the contact information given was no longer useful. (Figure 5.1).

**Effectiveness of a Pilot Screening, Brief Intervention for Individuals Presenting to the Emergency Department with Risk for Alcohol Use Disorder**

**Figure 5.1 Enrollment Flow Diagram**

**Screening by the ED intake or primary nurse.** In this pilot intervention study, the individual that presented to the ED with an injury or illness was first triaged by an RN either
through the ED quick-screen area, through POD A if they arrived by ambulance, through life flight pad if they arrived by helicopter. If by ambulance or life flight, the charge nurse triaged the individual to a specific area in the ED, depending on the report and severity of illness or injury. If the individual arrived via the quick-screen area, the intake nurse performed a quick screen of the individual’s complaints and triaged them based on the nurses’ findings using the emergency severity index tool.

The patients were assessed by an RN using the Nursing Admission Assessment Record System in Centricity. Centricity was the electronic medical record when the study began and collecting data regarding substance use was not usual care by the RN, however the provider did assess and documented when the history was obtained. In the new electronic health record known as Epic, the RN clicked on the history substance tab and a screening tool for alcohol use populated. The assessment was obtained by the RN, or by the provider as part of usual care: Are you currently using alcohol? How often do you have a drink containing alcohol? How many drinks containing alcohol do you have on a typical day when you are drinking? How often do you have 6 or more drinks on one occasion? Type of drink per week? In most instances the type of drink consumed and the amount per week were the only information collected. Additionally, specific triage questions as part of usual care (chief complaint, allergies, medical/surgical history, medications, thoughts of hurting self or others, travel outside the United States) dependent on their chief complaint were obtained. Furthermore, patients were evaluated by an MD for labs, radiologic studies, and for medical treatment needs.

When an individual reported consumption of alcohol to the ED intake, primary nurse or the provider, a recruitment flyer was provided to the patient. Once the patient was settled and was deemed medically stable the PI consulted with either the RN or the provider prior to
approaching the patient. The RN and/or the provider asked that I not attempt to recruit the patient when they felt that the patient was not alert enough or would not cooperate with the collection of data. Referrals were obtained from both the RN and providers, and in some cases the nurse navigators, when the patient voiced interest in obtaining more information regarding the study. Communication that a patient was interested was made through face to face contact, or via telephone either via voice or text.

Once the PI was made aware of a potentially eligible participant, the PI approached them using the following method:

a. The patient was approached using their preferred name, in terms they could understand, and in a language preferred by the participant, in both English and Spanish.

b. The PI always introduced himself and informed the patients that a study was being conducted in the ED for patients interested in helping their nurses and doctors learn more about their health habits.

c. The patient was asked if they had any questions regarding the informational recruitment flyer they had received.

d. The PI then informed the patient about the study details and how much time may be needed to complete. These specifics included that the study was voluntary, that the patient could ask to stop the study at any time, and that their care would not be affected if they did not complete the study.

Other details included, the time it would take to conduct the initial screening for eligibility, review of the consent, going over the questionnaire, and the brief intervention with the navigator.
Recruitment flyer. The flyer briefly described the nature of the study and the prospective participants were encouraged to read the flyer and ask questions. The flyer contained the following information:

- Do you want to be in a study to help the nurses and doctors learn more about your health habits?
  
  a. Inclusion criteria were as follows: 18 years and older, willingness to help nurses and doctors learn how to care for them better, comprehension of and ability to speak either the English or Spanish language
  
  b. Compensation: $20 per person after completing the initial study to learn about their health habits and some personal information. An additional $30 as compensation for their time at 3-months to complete another survey, either through a telephone follow-up call or an in-person interview.
  
  c. If they wanted to be a part of the study, they were encouraged to let their nurse know and the PI was notified.
  
  d. The PI contact information, Institutional Review Board and hospital site numbers, and approval stamps were provided if they had any questions regarding the study.

Screening participants for eligibility. The PI verbally informed the patient that they would be screened for eligibility based on inclusion and exclusion criteria for this study. If the patient met inclusion criteria, then the patient was asked about their alcohol use in the last month, which included daily and weekly use. Alcohol questions were based on the NIAAA (n.d.) guideline for standard drinks, Helping Patients Who Drink Too Much. The questions assisted the
PI to identify risk for AUD by asking about their consumption of beer, wine, or other alcoholic beverage, heavy drinking days, and heavy weekly consumption.

For those patients that met inclusion criteria, the PI asked the individual if there was interest in participating in the study. Patients who were not interested were thanked for their time, and their treatment in the ED continued with no further interruptions. Patients who verbalize interest in participating in the study were then consented by the PI as described in the next section. In addition, a text was sent to the nurse navigator that a patient was being enrolled, this assisted the navigator to organize their workflow. The participants at this time were reminded once again that they could choose to stop being a part of the study if they decided at any time and that they may refuse to answer any questions that they did not want to answer and still remain in the study.

**Consent.** After all the participants questions were answered regarding the recruitment flyer and the screening process, the informed consent process was initiated.

1. All enrolled participants were provided an informed consent detailing that research was being conducted, time commitment, how often they would be contacted by phone, via text, or email. In addition, an explanation of the difference between usual care vs. intervention was discussed. Furthermore, topics to be addressed, compensation, and risks and benefits associated with the study were explained.

2. The participants read along as the PI went through the consent, they were offered time to read the consent if they chose at their own leisure and were provided the opportunity to ask any questions they may have had. The teach-back method was
used to establish understanding and is described later in the chapter under instruments (Kripalani, Bengtzen, Henderson, & Jacobson, 2008).

3. In addition, the PI’s contact information, Institutional Review Board, and hospital site numbers were pointed out on the consent, in case the individual should have any questions after the initial enrollment.

4. A copy of the consent form was provided to the participants and the original copy kept in the PI’s locked research files.

5. The participants understood that the study was voluntary and that they could at any time withdraw consent without prejudice to their future medical care at the health care system.

6. To ensure anonymity, the participants were assigned an individual study code known only to two persons, the PI and the UCLA School of Nursing doctoral dissertation chair: These codes are non-traceable back to the participants.

7. The participants were given as much time as they needed to decide if they would like to participate. In addition, an explanation that the participants would no longer be able to enroll in the study when the PI was not present in the ED was shared. If they chose to wait, they were given a time when the PI would be leaving the ED for the day and were asked to inform their nurse if they decided to participate. Once the decision was made to participate, the participants signed the consent form.

**Follow-up contact information.** Once the consent was signed, follow-up contact information was obtained on the demographic interview form which included a phone number and/or an email of the participants, and if available, their family members’ contact information,
or that of a friend. For purposes of follow-up, the PI explained to the participants that it would be important to have a contact phone or email of a friend or family member in case the participants could not be reached at the phone or email provided during their initial visit. Most of the participants enrolled did not want to or did not have this additional information to provide.

**Survey questionnaires.** For those participants who were consented and enrolled into the study a patient self-administered paper questionnaire packet was provided. The following demographic information was collected, date of birth, age, race, marital status, education, languages spoken, age of first alcohol consumption, occupation, primary work status, money earned, health insurance, sexual orientation, and gender identity. The demographic information was followed by collection of outcome variables using the following questionnaires: The Alcohol Use Disorder Identification Test Consumption (AUDIT-C), The Readiness to Change Questionnaire, the HBMI-R, and The Patient Health Questionnaire (PHQ-2 and PHQ-9). The questionnaires were completed by the enrolled participants prior to being placed into either the comparison or intervention group and on average took 30 minutes to complete. The description and psychometrics of the instruments making up the questionnaire are explained later in the measures section. Scoring instructions for each instrument are available and these scoring instructions were followed when analyzing the data. Participants were informed that they could skip any question for any reason without any explanation while filling out the questionnaire.

Two participants during data collection revealed that they had thoughts of self-harm, suicide or that they would be better off dead. None revealed that they had thoughts of hurting others. The attending physician and charge nurse were notified immediately. At this point, the participant was assigned a constant observer and the room was assessed for safety hazards. In addition, the physician provided the staff with orders for referral to the psychiatric liaison team
to gather additional information to evaluate lethality or imminent danger to self per hospital protocol, and the study was stopped.

**Comparison group.** For this study, a convenient sample was enrolled into a comparison group and received a pamphlet on diet and exercise in addition to usual care by a nurse navigator to mask the focus on alcohol use. Usual care at the study site consisted of instructing the participants to stop drinking and they were provided with a handout for various treatment facilities in the community. Upon completion of the baseline study, participants received $20.00 as compensation for their time.

In the second phase of the study, after enrolling the comparison group, the intervention group was actively recruited. At this time, a nurse navigator provided a one-time BI.

**Intervention group.** The nurse navigator provided a one-time BI to the subsequent enrolled participants in the intervention group:

1. The FLOW (Feedback, Listen and Understand, Explore Options, Avoid Warnings) Model was used for the BI (Saitz, 2015b). In addition, a booklet from the NIAAA titled Rethinking Drinking was used to aid in discussion.
   a. Brief Intervention is a process that can be provided by a staff member 1:1 with individuals presenting to the ED with AUD risk for 5-10 minutes at least once. The main goal would be reduction of risk for AUD and consumption or abstinence and a change in behavior for example, stopping at the bar on the way home from work (Saitz, 2015b). In this study, the brief intervention took on average 16 minutes.
   b. FLOW is a structured brief intervention that began with personalized feedback of the individuals’ screening or lab results, open-ended questions
were used to elicit what the individual’s thoughts were about the nurse
navigator’s feedback. Feedback was followed by an empathic approach of
listening to what the individuals think about the information, and
understanding, repeating, and rephrasing what they have shared. The final
step involved exploring options and goal setting, and discussions were
directed toward the individuals’ interest, i.e. avoiding friends who drink
(Saitz, 2015b).

c. The booklet from the NIAAA titled, Rethinking Drinking was reviewed
with the participants. The nurse navigator reviewed how many standard
drinks were in a typical container of beer, wine, distilled spirit. In addition,
how many drinks on a typical day or week would be considered low or
high risk. Furthermore, each participant was educated about their risk level
based on what their answers were on the AUDIT-C. They were then told
how many standard drinks they were consuming daily and weekly. Using
national drinking patterns, the participants who drank more than either the
single-day limits or the weekly limits or both the single-day limits and the
weekly limits were informed that they were at either increased risk or
highest risk for injuries, health problems, and AUD risk. Based on the
information provided to the participants, they were asked what some
reasons are why they might want to make a change, and what are some
possible reasons why they might not want to change. These responses
were written in the booklet. The nurse navigator then summarized what
the participants had shared. A change plan was then initiated, the goal was
to write down how many drinks the participant agreed to drink daily as well as weekly and or if they were ready to cease. Based on their readiness to change, the nurse navigator may have discussed a more realistic change plan. The participants were then asked to provide a realistic date to start the change plan. Based on this date, the nurse navigator explored again how realistic the date was. Additionally, reason for change, strategies, people that may help, what success looks like, and possible roadblocks were discussed and documented in the booklet. Lastly, a drinking tracker card was provided, the participants agreed to keep track of how many times they drank more that their daily and weekly goal and then document any situation or trigger that may have hindered their change plan.

d. Furthermore, the Rethinking Drinking booklet was given to the participants for them to review and to take to any follow-up appointments set up by the nurse navigator or by the participant. The booklet also contained some strategies for cutting down alcohol use and offered suggestions for social as well as professional support ideas.

2. Finally, upon completion of the baseline study, participants received $20.00 as compensation for their time.
Follow-up for the comparison and intervention groups.

1. The PI contacted the participants monthly either through text, via email, or they received a phone call.

2. The follow-up visit at 3 months was either via a phone call, or in-person. Only one individual was met in person in a location where the individual could meet.

3. The PI utilized the same instruments that were provided at baseline to assess the participants’ drinking behavior for the prior month,
   a. The AUDIT-C screening tool
   b. The Readiness to Change Questionnaire
   c. The Health Belief Model Instrument – Revised (HBMI-R)
   d. The PHQ 2 and 9 – The Patient Health Questionnaire

4. Upon completion of the follow-up study, participants in both intervention and comparison groups were given $30.00 in addition to the $20.00 at baseline, for a total of $50.00 as compensation for their time.

Nurse Navigator Feasibility Explored

The feasibility of a RN navigator delivered brief intervention on AUD risk and alcohol consumption was explored.

**Defined.** Through training the nurse navigators had the expertise and knowledge to provide a BI in a busy ED environment to participants who met criteria for enrollment and were able to provide the BI within 5-15 minutes.

**Measured.** A plan was developed to formulate training for the navigators. Each navigator received training to provide an understanding of how to deliver the BI based on the SBIRT model to included motivational interviewing using the FLOW model previously described. The
training provided understanding of the criteria for risky alcohol use, it equipped the nurse navigators with understanding of the effects of AUD on the health and mental health of persons who drink in excess. Teach back was used to ensure understanding of BI and FLOW.

The time to deliver a BI was discussed with the nurse navigators and it was agreed that 5-15 minutes to deliver was acceptable. A tracking form was developed which provided the average time it took to conduct the BI or usual care in the ED by the nurse navigators. A minimum recruitment sample was discussed to ensure the nurse navigators understood about how many participants would be receiving usual care or BI. This was important to ensure an adequate sample for a pilot study at baseline was recruited to ensure an adequate sample size at follow-up.

**Nurse Navigator Fidelity Plan**

**Nurse navigator training.** The training for each nurse navigator was divided into three different separate days, totaling seven hours. On the first day, the navigators meet with the PI for one-hour prior to any collection of data from the comparison group. On a second day, the navigators watched a 4-hour SBIRT training course on-line with three separate modules and a quiz. Finally, on Day 3, following the SBIRT training course, the navigators met with the PI for two-hours prior to any collection of data from the intervention group. All 3 days of training will be described below.

On the first training day, prior to any collection of data from the comparison group, the nurse navigators met with the PI for an hour to ensure understanding of their role in providing usual care to study participants. The study design methods were discussed which included an explanation of the recruitment flyer, screening of potential participants, inclusion and exclusion criteria, consent procedure, survey questionnaires, and the follow-up process. Finally, the PI
explained that a comparison group and an intervention group would be enrolled at two separate timelines and that the first group would receive usual care, followed by an intervention for the second group. Each nurse navigator return demonstrated the usual care process as expected.

On the second training day, the nurse navigators completed the 4-hour SBIRT on-line training course, consisting of an SBIRT video training session, allowing them to go at their own pace. The SBIRT training was initiated once the first group of participants had been enrolled and received usual care, and prior to implementation of the next group of participants enrolled into the intervention group. The training focused on brief intervention with motivational interviewing using the FLOW Model. Power point handouts outlining the course were provide along with other handouts that were reviewed including, different tools used to assess drinking patterns, stage of change guidelines, and feedback, listen, explore option and Pros/Cons handheld cards for ease of following the on-line course. The objectives for the on-line training were found on Pacific Southwest ATTC eLearning website, which outlined the following:

1. Describe the background and rationale for conducting SBIRT with patients in primary care setting.

2. Utilize AUDIT or AUDIT-C to screen and identify patients engaged in moderate or high-risk alcohol consumption.

3. Demonstrate, through role-play and group discussion, the effective use of brief intervention strategies and techniques to motivate patients to change their at-risk substance use behavior and/or seek treatment.

Topics Included

1. Prevalence of substance use

2. Criteria for risky use
3. Effects of substance use on health and mental health functioning

4. Review of the AUDIT and AUDIT-C

5. Three-step brief intervention utilizing motivational interviewing

6. Motivating patients to accept a referral to specialty substance abuse treatment services

On the third training day, the nurse navigators met with the PI for two-hours after collection of data from the comparison group and before collection of data from the intervention group. In the two-hour meeting, the PI ensured the nurse navigators understanding of the on-line training course, in addition to, ensuring comprehension of the brief intervention. Each nurse navigator was provided the opportunity to return demonstrated performing a brief intervention with the PI. The navigators were given time to ask questions. Finally, the navigators verbalized comfort in providing the brief intervention. The PI was present at each nurse navigators first participant brief intervention. This was followed by a debrief of how the navigators felt about the encounter and feedback on opportunities for improvement for the next intervention.

A guide for the nurse navigators. A guide for the nurse navigators to follow when providing the FLOW to the participants was developed. The purpose of the guide was to ensure study protocol was followed and standard work ensured. The guide was emailed to each navigator and the PI sat with each of them during their training sessions and ensured all were comfortable with the guide. There was opportunity for practicing with the PI and for questions and answers. In addition, the teach back method was used to ensure the navigators understood the concepts of the FLOW. The guide was used to validate that the nurse navigators were comfortable performing the brief intervention with the intervention group, prior to collection of any data. The PI was with each navigator the first time they had an interaction with the
participants. The PI maintained contact with the nurse navigators throughout the study through on-going emails, in person meetings, and as needed to answer any questions that they may have had. In this study no additional training was necessary to ensure fidelity of the intervention however, some discussions to improve delivery of the intervention were discussed with some of the navigators (Appendix A).

**Permission to move forward with training.** The manager and director for the nurse navigators requested that I meet with each navigator to ensure they were well informed of the study protocol and that each of their questions were answered prior to providing the study participants with usual care or brief intervention. The system director who oversees the nurse navigators’ role across all five hospitals in the system agreed to pay for any time required for training and I attained her full support to utilize them in this current study. For the nurse navigators to be included in the study they had to be agreeable to following the research protocol as it was written and to attend all training sessions provided.

**Data Analysis**

Preliminary analyses included validity checking, scoring of instruments and calculation of reliability of scales (Cronbach’s alpha), assessment of missing data, descriptive statistics for the total sample and for the comparison and intervention groups, and distributional properties for variables included in further analysis. The equivalence of groups was assessed at baseline for demographics, alcohol use (risk for dependency and consumption), age first started drinking, health beliefs, depression, and readiness to change, using t-tests or chi-square as relevant to measurement characteristics. Because distributions were found to be substantially non-normal for several variables and the follow-up sample was small, non-parametric tests were used for most remaining analyses. The follow-up sample was compared on baseline data to those lost to
follow-up using Chi-Square or Wilcoxon Mann-Whitney. In addition, the follow-up sample groups were compared for equivalence on their baseline data using Chi-Square or Wilcoxon Mann-Whitney. For analyses using Chi-Square, when the results table stated expected value for each cell was $\leq 5$, likelihood ratio Chi-Square was reported instead of Pearson. Furthermore, when the results table stated expected value for each cell was $\leq 5$ and dichotomous variables were used, Fishers exact was reported.

Wilcoxon Mann–Whitney, Chi-Square, and t-tests (as appropriate to measurement level) were used to investigate if the intervention groups were statistically significantly better than the comparison group at T2 follow-up for outcome variables. Wilcoxon signed ranks, McNemar tests, and paired t-tests were used to investigate if each group improved from T1 baseline to T2 follow-up (T2). For the one outcome (number of standard drinks) which differed at baseline for the follow-up analysis sample, analysis for hypothesis testing was expanded to test the difference between groups in their change from T1 to T2 using Wilcoxon Mann-Whitney. Exploratory comparison of change scores for all other outcomes showed results equivalent to the simple T2 comparisons and so are not presented.

Preliminary data analysis showed that all sociodemographic characteristics measured for T1 baseline between the intervention and comparison groups had no differences by age, drinking history (age at first drink), gender, race, Hispanic Latino Spanish origin, language spoken, marital status, education, work status, income, health care coverage, living situation. Additionally, data analysis showed that all sociodemographic outcome measures for follow-up T2 analysis sample showed no differences between the intervention and comparison groups by age, drinking history (age at first drink), gender, race, Hispanic Latino Spanish origin, language spoken, marital status, education, work status, income, health care coverage, and living situation.
Because groups were substantially equivalent, group comparisons for hypothesis testing did not include covariates.

**Measures**

**Readability of forms.** All instruments and tools utilized in the study were in English and Spanish, and while most of the instruments were validated in Spanish previously, some were not. The documents that had not been translated into Spanish were translated and back translated into English by a certified Spanish translation company (HBMI-R, demographic Interview form, and participant questionnaire). In addition, study materials were reviewed for clarification by the PI who is a certified Spanish interpreter and a native Spanish speaker, to ensure concordant meaning. Furthermore, study materials provided to the patients were written at the fifth-grade reading level per readability statistics available in Microsoft Word for Macs (Microsoft, n.d.).

**Instruments**

The following section describes the instruments that were utilized for this study. The names of the instruments, their purpose, what they assess and measured, the number of questions, and the validity and reliability of each instrument.

**The NIAAA Guideline Screener in the NIAAA Clinician’s Guide.** This instrument was referenced to assess consumption of alcohol in the past 30 days and was found in the 2005 edition of the NIAAA (2005) *Helping Patients Who Drink Too Much*; it was used to screen individuals’ daily and weekly alcohol consumption. The content in the guide was influenced by physicians, nurses, advanced practice nurses, physician assistance, and clinical researchers. The guide contained a single-prescreening question to assess the individuals’ alcohol use, if they admitted to consumption, an additional screening to assess heavy drinking days was performed, “how many times in the past 30 days have you had 4 SD for women or 5 SD for men? If the
screening was negative for at risk drinking, screening was stopped, and the individuals were advised to continue to stay below the heavy drinking limits. If the assessment was positive, a further assessment was performed to gather information on how many days a week on average the individual consumed alcohol and how many drinks on a typical day they consume. Finally, number of days a week and drinks typically consumed daily were multiplied to assess weekly averages of alcohol intake. Maximum drinking levels were described previously in the procedure section under screening. The guide contained a United States SD equivalency chart to estimate the number of SD’s consumed, dependent on type and size of drink reported. Patients who screened negative for heavy daily and weekly drinking days and found not to be at-risk drinkers were advised to continue to stay below the heavy drinking limits (NIAAA, 2005). The Clinician’s Guide was administered only at baseline for screening purposes (Appendix B).

In a comparison study, Fillmore and Jude (2011) examined the sensitivity and specificity of the definitions of binge drinking using the 5 SD for men and the 4 SD for women and blood alcohol concentration. In addition, they compared these two measures with the AUDIT screening tool as an indicator of at-risk problem drinking. The sample size consisted of 251 college students, of which (143) were men, (108) were women, (221) were Caucasian, (15) were African American, (7) were Hispanic, and (8) others. The mean age of the study participants was (26.5) years (s = 4.6 years]). Results indicated that the binge drinking definition of 5 or more SD for men and 4 or more SD for women had a high degree of sensitivity (.83) and specificity (.81) and was effective at detecting over 80% of individuals classified as at-risk by the AUDIT. In comparison, the .08% blood alcohol concentration binge drinking definition had a sensitivity of (.52) and specificity of (.92). Those individuals who did not achieve a .08 % BAC were significantly heavier (79.5) kg vs. (69.2) kg, p < .01. Furthermore, women in this study had
significantly lower AUDIT scores (3.6), drank less per occasion 2.2 SD, and drank less per week 1.1 SD as compared to men respectively, AUDIT scores (5.5); 2.8 SD per occasion; 1.7 SD drinks less per week, \( p < .01 \). These results validate other studies showing differences in gender body water volume and alcohol dehydrogenase levels.

An evaluation was performed by Agabio et al. (2012) to assess the effectiveness of the NIAAA guideline screener in the NIAAA Clinician’s Guide when compared with the longer version of the AUDIT. Two hundred inpatients admitted to anesthesia and critical care units with a median age of (58) years and predominantly women (65.5%) participated in the study. Results indicated that the NIAAA’s four screening questions to detect unhealthy alcohol drinking demonstrated a satisfactory agreement with the AUDIT when using cut off scores of \((\geq 8)\) for men and \((\geq 4)\) for women. The unhealthy consumption of alcohol detected by the NIAAA was (28.5%) as compared to the AUDIT (23.5%). The Negative Predictive Value (NPV) and Positive Predictive Value (PPV) of the NIAAA when tested against the AUDIT was (NPV 0.93) and (PPV 0.65), respectively. These results indicate (93%) of the individuals with negative NIAAA screening results will also screen negative using the AUDIT, and (65%) of individuals with a positive NIAAA screening will have a positive AUDIT. In addition, Positive likelihood ratio (PLR) and Negative likelihood ratio (NLR) was (6.00) and (0.24), respectively. These results indicate that the findings of a positive NIAAA screening is approximately 6 times more likely in AUDIT-positive individuals than among AUDIT-negative individuals and a negative NIAAA screening is (76%) less likely when compared to the AUDIT. The findings show the NIAAA Clinician’s Guide will falsely screen fewer individuals as positive than negative, a good finding. When individuals are wrongly classified as positive for AUD, a further evaluation may lead to the conclusion that the screening evaluation was false. Furthermore, when individuals are
wrongly classified as negative, further evaluation may be suspended and some individuals would be lost to intervention.

**Demographic interview form.** The demographic interview form was derived from the University of New Mexico’s Center on Alcoholism, Substance Abuse, and Addictions (CASSA, 2015). The center’s site offered training for postdoctoral positions in alcohol research, NIAAA training grants, and change methods and mechanisms (CASSA, 2015). In addition, some questions were derived from questionnaires used in the project QUIT (Quit Using Drugs Intervention Trial) by Gelberg et al. (2015), a randomized control trial with a brief intervention designed to reduce drug use. Lastly, other questions were derived from the U.S. Census Bureau Report (2010), these questions looked at changing racial and ethnic diversity in the United States. The interview form was composed of several items that assess demographic characteristics; for the protection of patients’ confidentiality, street address information will contain only city, state, and zip. The following were collected in our study: date of birth, age, telephone number, email, ethnicity and race, living situation (homeless/residence), marital status, employment status, primary occupation, past months family income, level of education, and degrees held. The following questions were added to the demographic interview form to capture further information; languages spoken at home, and health insurance coverage.

In addition, demographic data on sexual orientation and gender identity were collected per recommendations from the National Lesbian, Gay, Bisexual, and Transgender (LGBT) Health Education Center (2016). In a web-based training seminar, titled *Training frontline staff to collect data on sexual orientation and gender identity*, the speakers emphasized that data collected on orientation and identity can lead to improvements in population health for LGBT patients who face health disparities as a result of non-identity. The collection of these data are
required by the Centers for Medicare and Medical Services (CMS) as of 2015 for health care institutions utilizing electronic health record (EHR) systems as part of the Meaningful Use program.

Furthermore, screening for age at first alcohol use to assess how old the individual was when they first started drinking was obtained. The question was obtained from the Wave 2 study, a 3-year follow-up from 2004-2005 National Epidemiologic Survey on Alcohol Related Conditions (Chen, Yi, Dawson, Stinson, & Grant, 2010). The Demographic Interview form was administered at baseline (Appendix C).

Demographic characteristics are important to collect, and studies have shown significance in the amount one drinks based on gender, age, education level, ethnicity, employment, and other characteristics. Results of a 2013 national survey conducted by Substance Abuse and Mental Health Services Administration [SAMHSA] reported drug, alcohol, and tobacco use for over 67,000 non-institutionalized United States citizens (SAMHSA, 2014). The study reported that (44.4%) of males vs. (31.4%) of females among those 18 to 25 years old were binge drinkers. In the same study, rates of binge drinking were (0.8%) for individuals 12 or 13 year of age, (4.5%) for 14 or 15 year olds, (13.1%) for 16 or 17 year olds, (29.1%) for 18 to 20 year olds, and finally (43.3%) for individuals ages 21 to 25 years (SAMHSA, 2014).

In addition, the SAMHSA (2014) study reported drinking consumption varied by education level with (23.1%) of college graduates reporting binge drinking vs. (25.4%) of those with some college education and no degree. Furthermore, (69.2%) of individuals who graduated from college consumed alcohol currently vs. (36.5%) of those with less than a high school education. The rate of binge drinking for individuals 12 or older for Asians was the lowest at (12.4%) as compared to (20.1%) for blacks, (23.5%) for American Indians or Alaskan Natives,
(24%) for Whites, (24.1%) for Hispanics, and (24.7%) for Native Hawaiians or Other Pacific Islanders. Finally, among adults who were binge drinkers and heavy alcohol users, (76.1%) and (76%) were employed full or part time, respectively (SAMHSA, 2014).

The readiness to change questionnaire. This form assessed the participant’s stages of change for cutting down or quitting alcohol use over time, it was easy to administer, and was used to gauge participant’s treatment readiness. The readiness to change questionnaire has good psychometric properties with satisfactory internal consistency and test-retest reliability (Rollnick, Heather, Gold, & Hall, 1992). The readiness to change questionnaire is a 12-item instrument containing three scales each with four items used to measure the individual’s readiness to change alcohol-related behavior. The precontemplation (P) scale items are numbered 1, 5, 10, and 12, the Contemplation (C) scale items are numbered 3, 4, 8, and 9, and the Action (A) scale items are numbered 2, 6, 7, and 11. The scoring range of each scale is -8 through 0 to +8 with -2 = strongly disagree, -1 = disagree, 0 = unsure, +1 = Agree, +2 = strongly agree. The highest score represents the individual’s stage of change. If scores are equal, the tie goes to the scale that follows, e.g., if precontemplation and contemplation both score 6, the patient will be placed in the contemplation scale. The Precontemplation scale score is reversed, with a positive score signifying a lack of readiness to change e.g., +2 = strongly disagree (Heather & Rollnick, 1993).

The readiness to change questionnaire was administered at baseline and re-administered at the 3-month follow-up visit (Appendix D).

In a validity and reliability study, Rollnick et al. (1992) developed an instrument to assess drinkers’ readiness to change for assignment to a stage of change for the purposes of providing them a brief intervention. The initial psychometric analysis was a 20-item scale, after an initial analysis, item screening resulted in the elimination of some items in addition to, questions from
each of the three scales used in this study (precontemplation, contemplation, and action) leaving a 12-item scale for final analysis. Mean age of the Rollnick study sample was 35.4 years, 94% were male, mean alcohol consumption was approximately 0.5 liters a week. Results of internal consistency, test-retest reliability, relationships among scale scores, and allocations to stage of change were reported. The Cronbach’s alpha ($\alpha$) for the readiness to change questionnaire scales were reported: precontemplation ($\alpha = 0.73$); contemplation ($\alpha = 0.80$); and action ($\alpha = 0.85$), indicating good internal consistency and reliability of each scales test score. Second, test-retest reliability between two occasions of administration for the three scales were reported: precontemplation ($\alpha = 0.82$); contemplation ($\alpha = 0.86$); and action ($\alpha = 0.78$), indicating correlation and good reliability for each of the three scales. Third, the Person product-moment correlation coefficient between the adjacent scales e.g., between precontemplation and contemplation, were reported as higher than the correlation between the non-adjacent scales e.g., precontemplation and action ($P \times C$), $r(-0.53)$; (C x A), $r(0.57)$; (P x A), $r(-0.36)$. Fourth, the differences reported were in the predicted direction and were statistically significant ($P \times C$) vs. (P x A), $t(2.53)$, df(136), $p < 0.01$, one-tailed test; (C x A) vs. (P x A), $t(3.09)$, df(136), $p < 0.01$.

In addition, Rollnick et al. (1992) reported that out of 85 individuals, 35 (41.2%) were in the pre-contemplation stage; 16 (18.8%) were in the contemplation stage; and 34 (40.0%) in the action stage. Furthermore, a test of concurrent validation was found to be statistically significant when looking at the relationship between the stage of change and whether the individuals thought they drank too much, (Kendall’s Tau = -0.341), $p < 0.001$. Finally, in a separate validation when looking at the relationship between the stages of change and whether the individuals thought they would be cutting down their drinking in the future, the relationship was statistically significant (Kendall’s Tau = -0.454), $p < 0.001$. The readiness to change
questionnaire validity and reliability was supported in this study with mainly male subjects measuring what it intended to measure, a stage of change dependent on the individual’s readiness to change (Rollnick et al., 1992).

In a separate study, investigating validity of the readiness to change questionnaire Hannöver et al. (2002) studied individuals with AUD from a general population in Germany. The total sample size was 4075, with 302 individuals identified with AUD, of which (216) were male and (86) female. The researchers reported results of internal consistency and discussed results of the quick and refined method. The quick method assessed three stages of change, and the refined method assessed preparation, which is another stage in the Transtheoretical Model.

The Cronbach’s alpha for the readiness to change questionnaire scales for those with AUD were as follows: precontemplation = $\alpha(0.68)$; contemplation = $\alpha(0.79)$; and action = $\alpha(0.83)$, indicating good internal consistency and reliability of each scales test score. In using the quick method, most of the individuals were allocated to the precontemplation stage (67%), followed by the contemplation stage (24%), and lastly the action stage (8%). Using the refined method, most of the individuals were allocated to the precontemplation stage (58%), followed by the contemplation stage (15%), then the preparation stage (4%), and lastly the action stage (4%). However, when using the refined method, (19%) of the individuals with AUD could not be allocated to any stage. The study shows good psychometric properties and predictive validity when using the readiness to change questionnaire with patients with AUD and allows quick staging for individuals (Hannöver et al., 2002).

In another study, Rodríguez-Martos et al. (2000) explored the reliability and validity of a Spanish version of the readiness to change questionnaire by testing the internal consistency, and test-retest reliability for the three stages of change scales; precontemplation, contemplation, and
action, and compared the results to the English version. Additionally, the readiness to change questionnaire was compared with the stages of change classifications assessed by three psychiatrists and one physician trained in screening and treatment for AUD. The sample size of 201 with an average age of 46 years (80.6%) and mostly male (68.2%) consumed alcohol daily, with 12.9% 3-6 days per week, 13.9% 2 days per week, and 5% 0-1 day per week. Psychometric results for this study reported Cronbach’s alpha for the three scales as follows: precontemplation (α = 0.58); contemplation (α = 0.75); and action (α = 0.80). The English version results were as follows: precontemplation (α = 0.73); contemplation (α = 0.80); and action (α = 0.85). Test-retest reliability between two occasions of administration were as follows: precontemplation (α = 0.81); contemplation (α = 0.87); and action (α = 0.86). The English version results were as follows: precontemplation (α = 0.82); contemplation (α = 0.86); and action (α = 0.78). Between the two tests in this study, the weighted kappa coefficient was κ (0.82) with Pearson correlation showing a significant relationship between both test administrations for each scale: precontemplation r(0.81); contemplation r(0.87); and action r(0.86). The stages of change, when measured with the Spanish version of the readiness to change questionnaire and alcohol consumption, showed a significant difference between groups (F[2, 198] = 4.5, p < 0.05; e.g.; those in action reported less drinking than the individuals in other stages, not unlike that of the English version (Rollnick et al., 1992). The study results indicate fair internal consistency and good test-retest reliability of each scales test score when compared to the English version with individuals identified with AUD (Rodriquez-Martos et al., 2000).

In a study examining psychometric properties and factor structure in Sweden for the readiness to change questionnaire, Forsberg, Halldin, and Wennberg (2003) tested the three-stage model to that of a one-stage model. The sample size for the study was 165 individuals, (72%)
were male and (28%) were female, the average age was (31-59) years for males and (≤ 30) years for females, (9%) of females and (6%) of males were diagnosed with AUD in the last 5 years, and on average binge drinking episodes occurred 2 to 4 times per month for both males and females. The three-stage model allocated individuals to one of three stages based on their highest score, whereas the one-factor model combined all 12 items and was scored as a Likert scale. Confirmatory factor analyses revealed that the factors in the three-stage model were correlated and were found to be the best fit for data; the root mean square error of approximation (RMSEA) was (RMSEA 0.06) for the three-stage model and (RMSEA 0.12) for the one-stage model. In addition, in the three-stage model (the two stages adjacent to each other e.g., between precontemplation and contemplation), had higher correlation than the two stages between the non-adjacent scales e.g., precontemplation and action. In test-retest reliability, 16 out of the 18 individuals in the three-stage model were allocated to the same stage of change both times. Internal consistency for the three-stage model were as follows: precontemplation (α = 0.78); contemplation (α = 0.80); and action (α = 0.80). The one-stage model when divided into three discrete variables resulted in 15 patients in the same third of the variables both times. Internal consistency for the one-stage model was 0.88, when treating the continuous variable as a discrete trichotomous scale. The three-stage model was found to be reliable and valid in this study, as it has been in previous studies, and additionally it was found to be consistent with the stages of change model when using the three-stage model.

**Alcohol use disorder identification test consumption (AUDIT-C).** The AUDIT-C is a brief three-item alcohol-screening tool utilized to reliably assess hazardous drinking in the last 90 days that may place the patient at risk for AUD and is a modified version of the AUDIT instrument containing the first 3 questions of the 10-item AUDIT screening tool. The three items
are scored from 0 to 4, and to provide a measure of overall severity, the AUDIT-C is scored on a scale of 0-12: A = 0 points, B = 1 point, C = 2 points, D = 3 points, and E = 4 points.

1. A total score of 0 is given to someone who has not consumed alcohol in the past 3-months
2. 1-2 points indicates a negative screen for hazardous drinking for women
3. 1-3 points indicates a negative screen for hazardous drinking for men
4. ≥ 3 indicates a positive screen for hazardous drinking for women
5. ≥ 4 indicates a positive screen for hazardous drinking for men

The AUDIT-C was administered at baseline and re-administered at the 3-month follow-up visit (Appendix E).

In a study comparing the AUDIT and the AUDIT-C with Veterans Administration (VA) male patients, Bush, Kivlahan, McDonell, Fihn, and Bradley (1998) surveyed 243 patients who consumed 5 or more drinks daily over the past year. The AUDIT-C had a higher area under the receiver operating characteristic (AUROC) than that of the AUDIT (AUROC 0.891 vs. 0.881, \( p = .03 \)). A score of ≥ 4 on the AUDIT-C identified (86%) of men with AUD. When the men in the group had a score of ≥ 3, the AUDIT-C when compared to the AUDIT had a sensitivity of (0.95 and 0.90) and a specificity of (0.60 and 0.69), respectively. When the score was ≥ 4 a sensitivity of (0.86 and 0.81) and a Specificity of (0.72 and 0.84), respectively were reported.

In a separate study comparing the AUDIT and the AUDIT-C with VA female patients, Bradley et al. (2003) interviewed 393 patients who consumed ≥ 4 drinks daily over the last year. A score of ≥ 3 identified (84%) of women with AUD using the AUDIT-C. The AUDIT-C when compared to the AUDIT had a sensitivity of (0.66 and 0.70) and a specificity of (0.94 and 0.86),
respectively, when the women in the group had a score of ≥ 3; for a score of ≥ 4 a sensitivity of (0.48 and 0.47) and a specificity of (.99) and (0.92), respectively were reported.

The validity and internal consistency of the abbreviated versions of the AUDIT (AUDIT-3, 4, C, PC, QF, FAST, and Five-Shot) were compared to the 10-item AUDIT and Cut down, Annoyed, Guilty, Eye Opener (CAGE) in an ED and Psychosocial Care Center for Alcohol and Drugs (PCCAD; Meneses-Gaya et al., 2010). The sample size consisted of 449 subjects from the ED and 81 from the PCCAD with a mean age of 36 years. Results of the study showed that the AUDIT-C had good predictive validity resulting in high area under the curve (AUC) indices when compared to the AUDIT for screening of alcohol abuse (AUC 0.89 and 0.92), for dependence (AUC 0.93 and 0.95), and for combined alcohol use and dependence (AUC 0.92 and 0.95). The abbreviated versions were found to be as satisfactory as the 10-item AUDIT. The AUDIT-C had an internal consistency of ≈(0.94) like that of the 10-item AUDIT. Concurrent validity for the AUDIT-C was evident showing high levels of correlation with the 10-item AUDIT r (0.97).

The effectiveness of the Spanish Version of the AUDIT-C tool was studied and a comparison to the full Spanish AUDIT tool was reported (Rodríguez-Martos & Santamariña, 2007). The study took place in a Barcelona trauma ED setting with a group of 120 participants. Thirty-three percent of the participants in this study had a high BAL on arrival, 78% were male, and the median age was 27 years. Results reported the diagnostic accuracy for the AUDIT-C for both genders as a sensitivity of (0.79), a specificity of (0.79), a PPV of (0.68), an NPV of (0.87), and an overall accuracy of 79%. Additionally, a cutoff score for men of ≥ 5 (overall accuracy = 74.5%) and for women ≥ 4 (overall accuracy = 96.2%) was reported. Lastly, the AUDIT-C showed an (AUROC of 0.861), p < 0.001 in men and (0.990), p = 0.001 in women. The gold
standards for the full Spanish AUDIT tool used to compare were as follows: specificity of (0.90) and sensitivity of (0.80), a cutoff score for men of $\geq 8$ and for women is $\geq 6$. This study reported good effectiveness of the Spanish AUDIT-C as a short assessment tool to assess hazardous drinking in the ED and indicated that more studies are needed for validation with other samples of patients.

**The patient health questionnaire (PHQ-2).** The PHQ-2 was administered to participants prior to administration of the PHQ-9. When the participant scored a 3 or greater on the PHQ-2, then the PHQ-9 was administered to gather more information. The PHQ-9 is described in the following section after discussion of the PHQ-2. Kroenke, Spitzer, & Williams (2003) reported that the PHQ-2 was only the first step in the assessment of depressed mood and further assessment was necessary in order to initiate treatment. The aim in using the PHQ-2 in this study initially, and prior to the PHQ-9, was to avoid overburdening participants with too many questions. The PHQ-2 uses the first two questions of the PHQ-9 and assessed how the participants had been feeling over the last 2 weeks. The participants answered not at all, several days, more than half the days, and nearly every day depending on how often they had been bothered by the statements they read. The two questions were as follows, during the past 2 weeks, have you often been bothered by the following problems: Little interest or pleasure in doing things? And, feeling down, depressed, or hopeless? The questions were scored as follows: 0 points = not at all, 1 point = several days, 2 points = more than half the days, and 3 points = nearly every day. The scores ranged from 0 - 6 with a cut off score of 3 or greater triggering the need to utilize the PHQ-9 in this study.

In a study to assess the criterion and construct validity of the PHQ-2 Kroenke, Spitzer, & Williams (2003) from May 1997 to March 1999 enrolled 6000 primary care and obstetrics-
gynecology participants into their study. The primary care sample enrolled a greater number of women (66%) with a mean age of 46 years and the obstetrics-gynecology clinic enrolled only women with a mean age of 32 years. The participants self-administered the PHQ-2, and the Medical Outcomes Study Short-Form General Health Survey (SF-20) which measures functional status. Lastly, the participants estimated how many office visits to their primary care that they had and how many days they were disabled in the past 3 months. A PhD clinical psychologist interviewed 580 participants to determine agreement of depression diagnosis with those of the clinical psychologists using the structured clinical interview for DSM-III-R. Criterion validity for assessing the operating characteristics of the PHQ-2 cut points was assessed using results from the clinical psychologist interviews using the following diagnostic status (major depressive disorder, other depressive disorder, or no depressive disorder). The findings reported for the criterion validity are as follows: 83% of patients with major depressive disorder had a PHQ-2 score of 3 or greater (sensitivity); 90% of patients without major depressive disorder had a score of less than 3 (specificity); 38.4% of patients with a score of 3 or greater had major depressive disorder (positive predictive value); in addition, a score of 3 was 2.9 times more likely in patients with major depressive disorder than without major depressive disorder (likelihood ratio). The PHQ-2 cutoff score of 3 or greater was comparable to the PHQ-9 diagnostic algorithm for any depressive disorder (kappa of 0.62 vs. 0.58) and for major depressive disorder (kappa of 0.48 vs. 0.54). The area under the curve for the PHQ-2 verses the PHQ-9 in diagnosis of major depressive disorder was 0.93 vs. 0.95 and for diagnosis of any depressive disorder was 0.90 vs. 0.92. Construct validity was assessed by comparing PHQ-2 depression scale to the SF-20 functional status, which resulted in a strong association between increasing PHQ-2 scores and decline in functional status (bodily pain, physical functioning, role functioning, general health perceptions,
social functioning, and mental health). The PHQ-2 correlated strongest with mental health (0.70 and 0.63), then by general health perceptions (0.47 and 0.46), social functioning (0.46 and 0.36), physical functioning (0.37 and 0.36), role functioning (0.37 and 0.29), and lastly, bodily pain (0.26 and 0.31). Additionally, as PHQ-2 scores increased so did self-reported disability days, health care utilization, and symptom-related difficulty in activities and relationships. The PHQ-2 was administered at baseline and re-administered at the 3-month follow-up visit (Appendix F).

**The patient health questionnaire (PHQ-9).** Depression is a predictive variable and was measured using the PHQ-9, a tool often used to assess for the severity of depression Substance Abuse and Mental Health Services Administration. (n.d.b). The PHQ-9 takes as little as 5 minutes to complete, demonstrating 61% sensitivity and 94% specificity for mood disorders in the adult individual (Maurer & Darnall, 2012). The PHQ-9 instrument tool contained nine items scored from 0-to-3: 0 points = not at all, 1 point = several days, 2 points = more than half the days, and 3 points = nearly every day depending on how often they had been bothered by the statements they read. To provide a measure of overall severity, the tool was scored on a scale of 1-27; 1-4 = minimal depression, 5-9 = mild depression, 10-14 = moderate depression, 15-19 = moderately severe depression, and 20-27 = severe depression. In addition, if five of the nine items had been a problem at least more than half the days in the past 2 weeks, a consideration of major depressive disorder is a possibility. Furthermore, if Question 9 alone was a problem in the past 2 weeks, then a major depressive disorder was also a possibility (Kroenke, Spitzer, & Williams, 2001). Lastly, when Question 9, (thoughts that you would be better off dead, or of hurting yourself in some way), was scored other than 0, a follow-up question was asked by the PI if they currently had thoughts of hurting themselves and if they had a plan to hurt themselves. If the answer was no, the patient continued the study. If the answer was yes, the study was stopped,
the attending physician and charge nurse were notified by the PI and the ED Suicide Patient or Danger to Other Supplemental Admission Orders protocol initiated: A one-to-one constant observer was ordered, and the patient was referred to the psychiatric liaison team for further evaluation. The PHQ-9 was administered at baseline and re-administered at the 3-month follow-up visit (Appendix F).

A cross sectional design study was led by Kroenke et al. (2001) with a sample size of 6,000 patients from both primary care clinics and obstetrics-gynecology sites. Individuals completed the PHQ-9 prior to an examination by their physician during 1997 and 1998. The participants at the primary care clinics and obstetrics-gynecology sites consisted of the following: women 66%, mean age of 31 and 46 years, White 79% and 39% respectively. The sample criterion validity to determine agreement was established by conducting a second interview with 580 individuals from primary care clinics utilizing a PhD psychologist or psychiatric social worker within 48 hours with test-retest of \( r (.84) \) and mean scores (5.08 vs. 5.03). Construct validity was examined by comparing the PHQ-9 and the MOS Short-Form General Health Survey (SF-20), which measured functional status and quality of life (mental, social, general, role, pain, and physical); a score of 100 equals best health.

External Validity was examined by comparing 3,000 individuals in primary care to 3,000 individuals in obstetrics-gynecology. Results reported internal reliability with a Cronbach’s alpha \( (\alpha = .89) \), sensitivity (.88), specificity (.88), with a depression score of \( \geq 10 \) (moderate depression). Criterion validity was measured using the positive likelihood ratio of a PHQ-9 score: A score of 10-14 was (2.6) times as likely in someone with major depression compared to a patient without major depression and a score of 20-27 was (36.8) times as likely in someone with major depression compared to a patient without major depression. For any depression, the
likelihood was (4.9) and (38.0) times, respectively. Construct validity was measured by reviewing the association between PHQ-9 scores and SF-20 scores for example, a PHQ-9 score of 1-4 and 20-27 resulted in an SF-20 score of (81) and (29) respectively for mental health. The PHQ-9 correlated strongly with mental health with an effect size of ($ES \ 0.73$). The area under the curve for diagnosing major depression was (AUROC $0.95$), meaning that the PHQ-9 discriminates between those individuals with major depression and those without major depression. The PHQ-9 instrument is short and was able to be administered in less than 5 minutes making assessment of the severity of depressive disorder easy in outpatient settings (Kroenke et al., 2001).

In a similar study, Huang, Chung, Kroenke, Delucchi, and Spitzer (2006) examined the factor structure of the PHQ-9 and compared the items in the PHQ-9 in four ethnic subgroups of African American, Chinese American, Latino, and non-Hispanic Whites. The sample size consisted of 973 primary care patients from a community health center who were given appointments for a physical exam and asked to complete the PHQ-9 prior to their examination. Furthermore, data from 5,053 individuals from a previous PHQ study were included for data analyses. The study included administration of Spanish or Chinese versions of the PHQ-9 for those individuals who were not bilingual. Latino individuals were the youngest (29.4 years) and more likely female (97.8%); Chinese Americans were the oldest (43.1 years) and more likely married (75.2%); both Latinos and Chinese Americans groups were more likely not bilingual (73.6% and 97.4%) respectively.

Results reported in the Huang et al. (2006) study revealed that no significance was found in PHQ-9 scores for all four ethnic groups. The lowest mean score was in the African American group (6.0) and the highest in the Chinese American group (6.5). There was a significant
difference in the percentage of patients among the ethnic groups exceeding a score of 
$\geq 10$ (moderate depression); Chinese Americans (15.2%) and non-Hispanic Whites (21.8%; $\chi^2 = 21.16$, df = 3, $p < .001$). Chinese Americans had the lowest percentage (7.3%) of moderate depression ($\chi^2 = 15.05$, df = 3, $p < .005$). Internal consistency reliability Cronbach’s alpha for the four ethnic groups was: African Americans ($\alpha = 0.80$), Chinese Americans ($\alpha = 0.79$), Latinos ($\alpha = 0.80$), and non-Hispanic Whites ($\alpha = 0.86$). Chinese Americans scored significantly higher on the PHQ-9 for psychomotor problems (0.8) as compared to other groups at (0.24-0.35, $F = 104.99$, df = 3, $p < .001$), had less issues with poor appetite or overeating (0.4) compared to other groups (0.85-0.96, $F = 64.10$, df = 3, $p < .001$), and had higher mean scores with sleep issues ($F = 25.71$, df = 3, $p < .001$). Latinos had more issues with decreased interest or pleasure in doing things (0.89) compared to other groups (0.56-0.67, $F = 23.63$, df = 3, $p < .001$). However, when compared to Chinese Americans and non-Hispanic Whites only, Latinos had less issues with sleep ($F = 25.71$, df = 3, $p < .001$), less issues with feeling tired or low energy ($F = 7.81$, df = 3, $p < .001$), and less issues with feeling bad about themselves ($F = 11.61$, df = 3, $p < .001$).

Differential item functioning (DIF) was statistically significant in the following groups: In Chinese Americans for sleep issues ($DIF = 24.87$), poor appetite or overeating ($DIF = 267.52$), and psychomotor problems ($DIF = 382.2$, $p < .001$), and in Latinos for little interest or pleasure in doing things ($DIF = 116.92$), sleep issues ($DIF = 41.71$), poor appetite or overeating ($DIF = 15.01$), and feeling bad about themselves ($DIF = 52.06$, $p < .001$). This study offers more support for the PHQ-9 specifically in four of the largest ethnic groups in the United States (African American, Chinese American, Latino, and non-Hispanic Whites) and in two common languages (Spanish or Chinese; Huang et al., 2006).
In a separate study, Martin, Winfried, Klaiberg, and Braehler (2006) reported validation results of the PHQ-9 and compared the instrument with two other screening tools: The General Health Questionnaire (GHQ-12) that screens for mental disorders and the Brief-Beck Depression Inventory (BDI) that measures severity of depression. In addition, the EURO Quality of Life Questionnaire (EuroQOL) and the 36-item Short Form Health Survey (SF-36) measuring individuals’ health perception status and quality of life were reported. The sample size of 2066 individuals had a mean age of 48.8 years, female (53%), married (50%), and comprised German citizens with German as a native language. Individuals were assigned to four diagnostic groups: Major depressive syndrome (MDS – five or more of the nine depressive symptoms are present); Other depressive syndrome (ODS – two, three, or four of the depressive symptoms are present); Depression symptom-screen positive (DS+ – at least one of the required screening symptoms is fulfilled); Depression symptom-screen negative (DS- – none of the required screening symptoms is present).

Results reported that women were detected as having statistically greater mood disorders when compared to males (12.3%) vs. (5.7%); $\chi^2(1 = 31.5), p < .001$ and depressed subjects were significantly older than nondepressed groups. Those individuals with MDS/ODS had a mean age of 53.4 years ($s = 19.0$) vs. those individuals with DS+/DS- with a mean age 48.4 years ($s = 18.0, t = 3.7, p < .001$). Mean depression scores were highest in the MDS group (15.92) and lowest in the DS – group (2.63; Welch test $W_j = 759, df[3], 86.8, p < .001$). All the mean scores increased and decreased in the same pattern in the GHQ-12, Brief BDI and EuroQOL. The PHQ-9 scores were strongly associated with the BDI scores $r(.73), p < .0001$ and GHQ-12 $r(.59), p < .0001$. The correlation of depression severity with health perception (EuroQOL) was significant $r(-.50), p < .0001$. The correlation between PHQ-9 depression severity and BDI $T(10.48)$,
$df(2029), p < .001$ was higher when compared to PHQ-9 and GHQ-12 $T(14.66), df(2029), p < .001$. The PHQ-9 depression severity was significantly higher with mental health $r(-.71)$, as compared to other subscales of physical functioning $r(-.45)$, physical role functioning $r(-.55)$, pain $r(-.59)$, and general health $r(-.60), p < .001$. The correlation between PHQ-9 depression severity with SF-36 was higher when compared to GHQ-12 with SF-36 $T(6.66 - 122.5), df(2051), p < .001$ and those of BDI with SF-36 $T(2.62 - 8.83), df(2051)$. This study provides strong support for the PHQ-9 instrument to differentiate depressed from nondepressed individuals (Martin et al., 2006).

The HBMI-R. The HBMI-R is a 16-item instrument that is intended to measure the health belief of patients at risk for alcohol use disorder. The instrument was derived from a 16-item instrument that measured health beliefs of diabetic patients and was initially derived from a sample of questions from a 76-item questionnaire that evaluated twelve health belief concepts for diabetic patients (Becker & Janz, 1985).

The 76-item questionnaire. The 76-item questionnaire was tested for internal and external consistency, and a confirmatory factor analysis was used to develop concepts of the HBM (Given, Given, Gallian, & Condon, 1983). The questionnaire was developed from other instruments used to measure the HBM concepts and diabetic education materials that focused on patient’s beliefs, and open-ended questions with diabetic patients. Based on the sample in phase one (N=156), the concepts and measures were refined and cross-validated in phase two (N=92) and an oblique-multiple groups factor analysis was used to partition the 76 questionnaire items into health-belief related scales. The sample was obtained from 11 ambulatory care centers, females (61% and 73%), White (93% and 77%), Age 31-60 (72% and 74%) respectively. Results of the final measures for both phases and Coefficients alpha for the six final measures were
reported as follows: Control of effects of diabetes (measures patients beliefs that they are able to control their disease [$\alpha$ 0.70 and .68]); barriers to diet (measures the perception of obstacles to following treatment [$\alpha$ 0.77 and .74]); social support for diet (measures perception of availability of help with treatment [$\alpha$ 0.76 and .84]); benefits of therapy (measures patients’ commitment to adhering to the prescribed therapy [$\alpha$ 0.89 and .87]); barriers to taking medications (measures the perception of obstacles to taking prescribed medications [$\alpha$ 0.73 and .79]); and impact of job on therapy (measures the perception that job pressures interfere with therapeutic regimen [$\alpha$ 0.82 and .82]; Given, Given, Gallin, & Condon, 1983).

**Diabetic health belief model 16-item instrument.** The estimated item-scale true score correlations for each of the items used to build the diabetic 16-item health belief model instrument were reported in the Given et al. (1983) study as previously mentioned and each was placed in a final measure item-cluster membership to measure the health belief of patients with diabetes. Becker and Janz (1985) reported that items used to build the health belief model 16-item instrument can be used to measure the patients’ perceived susceptibility, severity, benefits, and barriers. The items have been shown to be reliable and measure beliefs and both the benefits and barriers to therapy.

**Revision of instrument for this study.** The revised 16-item instrument in this study was derived from the 16-item diabetic instrument mentioned previously. The shortened tool used in this study was a 16-item instrument that measured the patients’ perceived health beliefs of susceptibility, seriousness (severity), benefits, and barriers of alcohol use disorder risk: i.e., needing and using alcohol can be a serious disease if you do not control it; my desire for needing and using alcohol will have a negative effect on my future health; If I change my drinking habits it will probably help me; I would have to change too many habits to decrease or quit drinking.
The items were scored using a 5-point Likert scale ranging from strongly agree to strongly disagrees. The questions were scored as follows: 5 points = strongly agree, 4 point = agree, 3 points = unsure, 2 points = disagree, and 1 point = strongly disagree. The scores were added up for each health belief category and then divided by 4, giving the PI the mean score ranging from 1 to 5. The HBMI-R was administered at baseline and re-administered at the 3-month follow-up visit (Appendix G).

The 16-item instrument was reviewed by a nurse researcher for content validity and three experts in the field of alcohol and drug use disorders for face validity. The four expert substance use disorder nurses were board certified Addiction RNs and had 10-15 years each of experience working with patients with substance use disorders and experts in chemical dependency. The instrument was sent via an email correspondence and the nurses were asked to review for accuracy in capturing the patient’s perception of their susceptibility to AUD, their perceived seriousness (severity) of their disorder, their perceived benefits to stop drinking, and their perceived barriers to quit drinking. In addition, the nurses were encouraged to ask questions, suggest changes, and to provide feedback within 2 weeks. Lastly, the nurses were told that participation was voluntary, of which three of the four nurses replied to the email correspondence, with two of the nurses providing further feedback. One nurse requested that I add a question related to anxiety/insomnia as a barrier, as she frequently has heard from her patients that they truly believe alcohol calms their anxiety and helps them sleep (Briles, 2017). Another nurse responded and shared that she believed I have captured the true health beliefs of those with AUD “You identified which areas you are wanting to address and questions specific to addressing each area” (I. Rozar, personal communication, April 19, 2017).

**Human Subject Protection and Consent (HSPC)**
Ethical considerations. All data collected through intervention or interaction, and identifiable private information provided and collected through this research was protected from privacy risk. UCLA and Scripps Health Care System’s Institutional Review Board (IRB) were the two sites that the P.I. applied for approval for this study. After both Institutions granted approval, the collection of data was initiated. Addendums were obtained for any added materials and renewals were completed by deadlines set.

Risks and benefits and a statement of confidentiality of personal records was explained to each participant. An explanation that treatment for any distress related to the study was offered for example, participants’ referral to the hospital Psych Liaison Team if those participants shared that the study had caused them any emotional distress as a result of discussing sensitive issues. Only participants that voiced suicidal ideations were referred to the Psych Liaison Team. Additionally, both UCLA and the Hospital IRB were notified of any unusual event occurrences for example, one participant during the follow-up phone call told the PI that she was going to sue the hospital for reporting to the department of motor vehicles that she had a seizure. Participants’ were also informed that the investigator without their consent may terminate the study. The PI ended three studies related to change in admission status, admitted suicidal ideations, and angry responses from a participant because of the questions being asked.

Anticipated benefits such as gaining knowledge about their own risk for AUD and realizing the risks of the harmful effects of consuming alcohol in excess were discussed. Addition discussion of the potential benefits to society that the study may help the hospital better understand how to care for patients with alcohol use disorder in the future. It is well known in the literature, that decreasing the risk for AUD and hazardous alcohol consumption lends to yearly decreased quality of life expenditures and societal harm that is estimated to cost $201.1
billion. Impaired drivers involved in motor vehicle crashes cost $44 billion yearly in lost productivity at the workplace, legal and court expenses, and medical expenses (National Highway Traffic Safety Administration, 2017; National Institute on Drug Abuse, 2015). A couple of the participants in the intervention group shared that the brief intervention encouraged them to seek help for their alcohol use, assisting them in their readiness to change and risk for AUD and hazardous alcohol consumption.

**Teach-back.** The PI establish understanding of the consent information utilizing the Teach-Back Method (TBM). TBM assessed both short and long-term recall and involved asking the individuals to verbalize or demonstrate consent sections in their own words for example, purpose of the study, randomization, follow-up interview and timing, potential risks and benefits, access to records, procedures for study withdrawal (Kripalani et al., 2008).

When the individuals were unable to correctly answer previously provided consent sections, repeated teaching was employed to clarify misunderstandings, after which TBM was employed a second time. TBM for purposes of obtaining the individuals’ understanding of health information and inclusion into the study was attempted twice for only three individuals.

**Privacy and confidentiality.** One of the weaknesses of conducting a study in the ED was privacy; this was especially true during high volume times. During these times i.e., holidays, weekends, and late afternoons and evenings, gurneys were placed in hallways that compromised privacy of the participants. Every effort was made to conduct all recruitments, assessments and interventions in rooms that provided privacy: These rooms had walls separating each room and either had thick glass doors, doors with small windows, or curtains at the foot of the bed. If no rooms were available, participants were provided privacy through other means e.g., in a corner of
the hallway facing away from other individuals. If privacy could not be guaranteed, any
continuance of the study was placed on hold until privacy could be assured.

Participants’ information was kept confidential and de-identified and locked in a drawer
in a locked office. The information of the study from the questionnaires was shared with the
nurse navigator for them to provide a brief intervention for example, amount of alcohol used by
the participant or the participants readiness to change stage. This information was provided for
purposes of study protocol with permission from the patient who was knowledge that the nurse
navigator would be visiting after the P.I. completed the questionnaires to complete the brief
intervention or usual care. The results of electronic data analyses were password protected and
kept in an electronic password protected file on a hospital-encrypted computer.
Chapter 5: Results

This chapter describes the results of the study, sociodemographic characteristics, and sample description (drinking behaviors, depression, & health belief) data analysis. Additionally, results are presented for hypothesis testing for Aims 1-3, comparing the intervention and comparison groups at Time 2 (T2) on specific outcome measures. Additionally, change from Time 1 (T1) to T2 are further described and examined within each group that were statistically significant and those that were improved.

Sociodemographic Characteristics

In this section, the sociodemographic characteristics at baseline T1 for the total sample (N = 75), as well as for the intervention (n = 38) and comparison (n = 37) groups separately, are reported. Results are also described comparing the two groups on each of these characteristics.

Data analysis for all sociodemographic characteristics measured for T1 between the intervention and comparison groups resulted in no difference by age, drinking history (age at first drink), gender, race, Hispanic Latino Spanish origin, language spoken, marital status, education, work status, income, health care coverage, and living situation. These finding revealed that the intervention and comparison groups at T1 were equivalent in sociodemographic characteristics (Table 5.1 sample sociodemographic characteristics).

Age. The age range reported for most of the participants was 51-60 years at baseline (T1), 19 (25.3%). For the intervention group, 11 (29.7%) were in the age range of 51-60 years and for the comparison, 8 (21.1%) were in the age range of 41-50 years. The mean actual age of the study participants was 44.97 years, (standard deviation [sd] = 15.08), median of 45.00 years. The mean age of the intervention group was 45.81 years, (sd = 15.71), median 45.00 years and for the comparison group was 44.16 years, (sd = 14.61), median 43.50 years. The results of an
independent sample t-test indicated that there was no statistically significant difference between
the mean actual age of the intervention and comparison groups ($t = -0.472, p = .638$).

**Drinking history.** The age with the highest percent of participants reporting having their
first alcoholic drink was 18 years [(n=13 (17.3%)], with 6 (16.2%) in the intervention group and
7 (18.4%) in the comparison. The average age in the US reported was 14 years and 17 years
globally (Knox, Hasin, Larson, & Kranzler, 2019). Fifty-four participants (72.0%) admitted to
having their first drink prior to the age of 21 years, with 24 (65.0%) in the intervention group and
30 (79.0%) in the comparison. One (2.7%) participant in the intervention group admitted to
having their first alcoholic beverage at the age of ten. The mean age of the first drink within the
study participants was 19.20 years (sd=6.78), median 18.00 years. The mean age of the
intervention group was 20.27 years (sd=7.04), median 18.00 years and the mean age of the
comparison group was 18.16 years (sd=6.44), median 17.00 years. The results of an independent
sample t-test indicate that there was no statistically significant difference between the mean
scores for age of having their first alcohol drink within the intervention and comparison groups ($t$
-1.357, $p = .179$).

**Gender.** A higher percent of participants 54 (72.0%) identified as men and 21 (28.0%)
identified as women. In the intervention group, 27 (73.0%) identified as men and10(27.0%)
identified as women. In the comparison group, 27 (71.1%) identified as men and 11 (28.9%)
identified as women. The results show that there was no statistically significant difference in
gender distribution between intervention and the comparison groups ($\chi^2 = .034, p = .853$).

**Race.** A higher percent of participants identified as Caucasian, 55 (73.3%) with 30
(81.1%) in the intervention group and 25 (65.8%) in the comparison. The results show that there
was no difference in race distribution between the intervention comparison groups ($\chi^2 = 4.744, df$
In this study, 18 (24.0%) participants identified as being Hispanic, Latino, or of Spanish origin, with seven (18.9%) in the intervention group and 11 (28.9%) in the comparison. The results show that there was no statistically significant difference in self-identifying as Hispanic between the intervention and comparison groups ($\chi^2 = 1.034, df = 1, p = .309$).

**Spoken language.** A higher percent of participants 59 (78.7%) reported speaking English, 15 (20.0%) spoke Spanish as well, with one (1.3%) reporting another language. In the intervention group, 30 (81.1%) participants reported speaking English and 6 (16.2%) reported speaking Spanish as well, with one (2.7%) reporting speaking another language. In the comparison group, 29 (76.3%) participants reported speaking English and 9 (23.7%) reported speaking Spanish as well. There was no statistically significant difference in Language spoken between the participants in the intervention and comparison groups ($\chi^2=1.994, df = 2, p = .369$).

**Marital status.** A higher percent of participants 33 (44.0%) reported that they had never been married with 18 (48.6%) in the intervention group and 15 (39.5%) in the comparison. The divorce rate overall for the participants was 33% (25), with 27% (ten) in the intervention group and 39.5% (15) in the comparison. The results show that there was no statistically significant difference in marital status distribution between the intervention and comparison ($\chi^2 = 4.714, df = 4, p = .318$).

**Education.** The highest-grade level reported or last year of school completed was some college with no degree or Associates ($n = 34, 45.3$%), with 19 participants (51.4%) in the intervention group and 15 (39.5%) in the comparison. The results show that there was no statistically significant difference in grade level distribution between the intervention and comparison groups ($\chi^2 = 2.367, df = 5, p = .796$).
Work status. Less than one-third of participants were unemployed, 22 (29.3%), with 11 (29.7%) in the intervention group and 11 (28.9%) in the comparison. Some of the participants 18 (24.0%) responded that they were employed full time, with 6 (16.2%) in the intervention group and 12 (31.6%) in the comparison. The results show that there was no significant distribution difference in work status between the intervention and comparison groups ($\chi^2=4.713, df=6, p = .581$).

Income. A higher percent of participants, 39 (52.0%) reported that they earned or received in the last month $0-1,000, with 15 (40.5%) in the intervention group and 24 (63.2%) in the comparison group. The results show that there was no significant distribution difference in money earned or received between the intervention and comparison groups ($\chi^2 = 5.963, df=4, p = .202$).

Health insurance coverage. A higher percent of participants 64 (85.3%) admitted to having health insurance coverage in the past 3 months, with 30 (81.1%) in the intervention group and 34 (89.5%) in the comparison. The results show that there was no statistically significant difference in health care coverage distribution between the intervention and comparison groups ($\chi^2 = 1.055, df=1, p = .304$).

Living situation. A higher percent of participants 23 (30.7%) reported they lived with a spouse or family in a house or apartment, with 14 (37.8%) in the intervention group (n=37) and 9 (23.7%) in the comparison. Some participants 19 (25.3%) shared a house or apartment with a friend, with seven (18.9%) in the intervention group and 12 (31.6%) in the comparison. Lastly, 18 (24.0%) were homeless or living in temporary shelter, with 11 (29.7%) in the intervention group and seven (18.4%) in the comparison. The results show that there was no statistically
significant difference in living situation distribution between the intervention and comparison groups \( \chi^2 = 5.009, df = 4, p = .286 \). See Table 5.1 for sample sociodemographic characteristics.

Table 5.1

Sample Social Demographic Characteristics ED patients Enrolled in Brief Intervention for Alcohol Use at Time 1 (T1)

<table>
<thead>
<tr>
<th>Sample Social Demographic Characteristics</th>
<th>Mean (sd), Median (N=75)</th>
<th>Mean (sd), Median Intervention (n=37)</th>
<th>Mean (sd), Median Comparison (n=38)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Age</td>
<td>44.97 (15.08), 45.00</td>
<td>45.81 (15.71), 45.00</td>
<td>44.16 (14.61), 43.50</td>
</tr>
<tr>
<td>Drinking History (Age first started drinking)</td>
<td>19.20 (6.78), 18.00</td>
<td>20.27 (7.04), 18.00</td>
<td>18.16 (6.44), 17.00</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Frequency (Percentage)</td>
<td>Frequency (Percentage)</td>
<td>Frequency (Percentage)</td>
</tr>
<tr>
<td>Age Range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-20</td>
<td>5 (6.7%)</td>
<td>3 (8.1%)</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>21-30</td>
<td>10 (13.3%)</td>
<td>3 (8.1%)</td>
<td>7 (18.4%)</td>
</tr>
<tr>
<td>31-40</td>
<td>17 (22.7%)</td>
<td>10 (27.0%)</td>
<td>7 (18.4%)</td>
</tr>
<tr>
<td>41-50</td>
<td>14 (18.7%)</td>
<td>5 (13.5%)</td>
<td>9 (23.7%)</td>
</tr>
<tr>
<td>51-60</td>
<td>19 (25.3%)</td>
<td>11 (29.7%)</td>
<td>8 (21.1%)</td>
</tr>
<tr>
<td>61-70</td>
<td>6 (8.0%)</td>
<td>3 (8.1%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>71-80</td>
<td>3 (4.0%)</td>
<td>1 (2.7%)</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>&gt;80</td>
<td>1 (1.3%)</td>
<td>1 (2.7%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Gender Identity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54 (72.0%)</td>
<td>27 (73.0%)</td>
<td>27 (71.1%)</td>
</tr>
<tr>
<td>Female</td>
<td>21 (28.0%)</td>
<td>10 (27.0%)</td>
<td>11 (28.9%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>55 (73.3%)</td>
<td>30 (81.1%)</td>
<td>25 (65.8%)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>6 (8.0%)</td>
<td>3 (8.1%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>5 (6.7%)</td>
<td>2 (5.4%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>Mixed Race</td>
<td>2 (2.7%)</td>
<td>0 (0.0%)</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>Other Race</td>
<td>7 (9.3%)</td>
<td>2 (5.4%)</td>
<td>5 (13.2%)</td>
</tr>
<tr>
<td>Hispanic Latino Spanish Origin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>57 (76.0%)</td>
<td>30 (81.1%)</td>
<td>27 (71.1%)</td>
</tr>
<tr>
<td>Yes</td>
<td>18 (24.0%)</td>
<td>7 (18.9%)</td>
<td>11 (28.9%)</td>
</tr>
<tr>
<td></td>
<td>(Percentage)</td>
<td>(Percentage)</td>
<td>(Percentage)</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>Spoken Language</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>59 (78.7%)</td>
<td>30 (81.1%)</td>
<td>29 (76.3%)</td>
</tr>
<tr>
<td>Spanish</td>
<td>15 (20.0%)</td>
<td>6 (16.2%)</td>
<td>9 (23.7%)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (1.3%)</td>
<td>1 (2.7%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>12 (16.0%)</td>
<td>7 (18.9%)</td>
<td>5 (13.2%)</td>
</tr>
<tr>
<td>Widowed</td>
<td>3 (4.0%)</td>
<td>2 (5.4%)</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td>Separated</td>
<td>2 (2.7%)</td>
<td>0 (0.0%)</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>Divorced</td>
<td>25 (33.3%)</td>
<td>10 (27.0%)</td>
<td>15 (39.5%)</td>
</tr>
<tr>
<td>Never Married</td>
<td>33 (44.0%)</td>
<td>18 (48.6%)</td>
<td>15 (39.5%)</td>
</tr>
<tr>
<td><strong>Grade Level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fifth – eleventh</td>
<td>5 (6.5%)</td>
<td>3 (8.1%)</td>
<td>2 (5.2%)</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>15 (20.0%)</td>
<td>7 (18.9%)</td>
<td>8 (21.1%)</td>
</tr>
<tr>
<td>Vocational Certificate</td>
<td>5 (6.7%)</td>
<td>2 (5.4%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>Some college, Associate degree</td>
<td>34 (45.3%)</td>
<td>19 (51.3%)</td>
<td>15 (39.5%)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>9 (12.0%)</td>
<td>4 (10.8%)</td>
<td>5 (13.2%)</td>
</tr>
<tr>
<td>Master’s Professional, Doctoral</td>
<td>7 (9.3%)</td>
<td>2 (5.4%)</td>
<td>5 (13.2%)</td>
</tr>
<tr>
<td><strong>Work Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>18 (24%)</td>
<td>6 (16.2%)</td>
<td>12 (31.6%)</td>
</tr>
<tr>
<td>Part time</td>
<td>7 (9.3%)</td>
<td>4 (10.8%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>Self Employed</td>
<td>8 (10.7%)</td>
<td>5 (13.5%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>Unemployed looking for work or</td>
<td>22 (29.3%)</td>
<td>11 (29.7%)</td>
<td>11 (28.9%)</td>
</tr>
<tr>
<td>not looking for work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sick leave or Disability</td>
<td>5 (6.7%)</td>
<td>4 (10.8%)</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td>Retired and not working</td>
<td>9 (12%)</td>
<td>4 (10.8%)</td>
<td>5 (13.2%)</td>
</tr>
<tr>
<td>Other</td>
<td>6 (8.0%)</td>
<td>3 (8.1%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td><strong>Money Earned Past Month</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1000</td>
<td>39 (52.0%)</td>
<td>15 (40.5%)</td>
<td>24 (63.2%)</td>
</tr>
<tr>
<td>1001-2500</td>
<td>19 (25.3%)</td>
<td>12 (32.4%)</td>
<td>7 (18.4%)</td>
</tr>
<tr>
<td>2501-5000</td>
<td>9 (12.0%)</td>
<td>6 (16.2%)</td>
<td>3 (7.8%)</td>
</tr>
<tr>
<td>&gt;5000</td>
<td>7 (9.3%)</td>
<td>3 (8.1%)</td>
<td>4 (10.5%)</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>1 (1.3%)</td>
<td>1 (2.7%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td><strong>Health Insurance Coverage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>11 (14.7%)</td>
<td>7 (18.9%)</td>
<td>4 (10.5%)</td>
</tr>
<tr>
<td>Yes</td>
<td>64 (85.3%)</td>
<td>30 (81.1%)</td>
<td>34 (89.5%)</td>
</tr>
<tr>
<td><strong>Living Situation (Housing)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live alone</td>
<td>9 (12.0%)</td>
<td>3 (8.1%)</td>
<td>6 (15.8%)</td>
</tr>
<tr>
<td>Live with my spouse</td>
<td>23 (30.7%)</td>
<td>14 (37.8%)</td>
<td>9 (23.7%)</td>
</tr>
<tr>
<td>Share a house/apartment</td>
<td>19 (25.3%)</td>
<td>7 (18.9%)</td>
<td>12 (31.6%)</td>
</tr>
<tr>
<td>Live with my parents</td>
<td>6 (8.0%)</td>
<td>2 (5.4%)</td>
<td>4 (10.5%)</td>
</tr>
<tr>
<td>Homeless/temporary shelter</td>
<td>18 (24.0%)</td>
<td>11 (29.7%)</td>
<td>7 (18.4%)</td>
</tr>
</tbody>
</table>

Sample Description: Drinking Behaviors, Depression, and Health Belief
In this section, the total sample and intervention and comparison groups are described at baseline for dependent variables of drinking behaviors and risk and independent variables of readiness to change those behaviors, depression, and perceived health beliefs, at baseline T1 are described (Table 5.2). In addition, we present results comparing the groups at T1 to address baseline group equivalence. At the end of this section, we also present results comparing T1 characteristics for those who provided T2 data and those who did not, as well as comparing intervention and comparison groups on T1 characteristics for those with T2 data (n=28).

Data analysis for group equivalence at T1 (n=75) resulted in no statistical significance at baseline between the intervention and comparison groups for the following sample descriptions: 6 or more standard drinks per occasion, hazardous drinking, readiness to change (precontemplation, contemplation, action), depression, perceived susceptibility, benefits, and barriers. At T1 there were significant differences on the number of standard drinks, prior 90-day alcohol use (time spent drinking), AUDIT-C scores (risk for AUD), and Health Belief Perceived Seriousness scores. Details of the differences are presented below.

**Standard drinks.** Participants at T1 reported about how many standard drinks containing alcohol they consumed on a typical day in the past 90 days with 36 (48.0%) participants reporting drinking 10 or more standard drinks (SD), with 24 (64.9%) in the intervention group and 12 (31.6%) in the comparison group. The results show that there was a statistically significant difference in the proportion of participants in the intervention group who reported a higher number of standard drinks versus the comparison group at T1 \( \chi^2 = 15.986, df = 4, p = .003 \), indicating that the participants in the intervention group reported consuming more standard drinks containing alcohol on a typical day in the past 90 days than did those in the comparison group.
**Six or more drinks.** Participants at T1 reported how often they had consumed 6 or more drinks on one occasion in the past 90 days with 38 (50.7%) participants reporting consuming this amount daily or almost daily, with 23 (62.2%) in the intervention group and 15 (39.5%) in the comparison group. The results show that there was no difference in the proportion of participants who report 6 or more standard drinks on one occasion in the past 90 days at T1 between the intervention and comparison groups ($\chi^2=4.706$, df=4, $p=.319$).

**Time spent drinking.** Participants at T1 reported how often in the past 90 days they used alcohol with 52 (69.3%) reporting consuming alcohol 4 or more times a week, with 26 (70.3%) in the intervention group and 26 (68.4%) in the comparison group. The results show that there was a statistically significant difference in the proportion of participants who used alcohol in the past 90-days at T1 between the intervention and comparison groups ($\chi^2 = 8.185$, $df = 3$, $p = .042$), indicating that the participants in the intervention group reported consuming a drink containing alcohol more often in the past 90 days than did those in the comparison group.

**Hazardous drinking.** In total, 73 (97.3%) participants initially at T1 scored high enough to be considered hazardous drinkers or at risk for AUD using the AUDIT-C, with 36 (97.3%) in the intervention group and 37 (97.4%) in the comparison group. Two participants, one (2.7%) in the intervention and one (2.6%) in the comparison group did not score high enough on the AUDIT-C to be considered hazardous drinkers. One of the two participants was 20 years old, and any consumption of alcohol under the age of 21 is considered hazardous. The second participant admitted to having 6 or more standard drinks less than monthly in the past 90 days and since this is considered binge drinking his drinking habits were considered hazardous (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2019). The results show that
there was no difference in the proportion of participants who reported hazardous drinking at T1 between the intervention and comparison and groups (Fisher’s Exact Test, $p = 1.000$).

**Readiness to change.** In this study at T1, 19 (25.3%) participants were assessed into the precontemplation stage of change, 40 (53.3%) into the contemplation stage, and finally 16 (21.3%) participants into the action stage. In the intervention group (n=37), 8 (21.6%) participants were assessed into the precontemplation stage of change, 22 (59.5%) into the contemplation stage, and finally seven (18.9%) into the action stage. For participants in the intervention group who were scored in the precontemplation stage, an intervention was only provided if they agreed to the intervention. All 8 (21.6%), agreed, and were provided with the same intervention as all other participants. In the comparison group (n=38), 11 (28.9%) participants were assessed into the precontemplation stage of change, 18 (47.4%) into the contemplation stage, and finally 9 (23.7%) into the action stage. The results show that there was no difference in the proportion of participants who had greater readiness to change to reduce alcohol use at T1 between the intervention group and comparison group ($\chi^2 = 1.111, df = 2, p = .574$).

**Risk for AUD.** In total 75 participants at T1 scored 3 or greater on the AUDIT-C scale indicating risk for AUD, with 25 (33.3%) individuals scoring the maximum of 12, with 17 (45.9%) in the intervention group and 8 (21.1%) in the comparison group. The results show that the mean AUDIT-C score of the T1 study participants was 9.12 (sd=2.87), median 10.00, the mean AUDIT-C score of the intervention group participants was 9.84 (sd=2.88), median 11.00, and the mean AUDIT-C score of the comparison group participants was 8.42 (sd=2.71), median 8.50. When comparing the mean scores at T1 between the intervention and comparison groups, the results of the paired T-test show that there was a significant difference in the mean AUDIT-C
These results indicate that the mean AUDIT-C scores at T1 for the intervention group were statistically significantly higher than the mean AUDIT-C scores for the comparison group, indicating that the participants in the intervention group were identified at increased risk for AUD.

**Depression.** At T1, 18 (24%) participants were assessed as having minimal depression, 14 (18.7%) as having moderately severe depression, with another 14 (18.7%) having severe depression. In the intervention group, 12 (32.4%) participants were assessed as having minimal depression, 9 (24.3%) as having moderately severe depression, with another 8 (21.6%) having severe depression. In the comparison group, 9 (23.7%) participants were assessed as having no depression, 9 (23.7%) as having moderate depression, with another 6 (15.8%) having severe depression. The results show that the mean PHQ-9 score of the T1 study participants was 10.13 (sd=8.68), median 11.00, the mean PHQ-9 score for the intervention group participants was 10.65 (sd=8.73), median 10.00, and the mean PHQ-9 score for the comparison group participants was 9.63 (sd=8.73), median 11.00. When comparing the mean scores at T1 between the intervention and comparison groups, the results of the paired T-test show that there was no significant difference in the mean PHQ-9 Depression scores at T1 between the intervention (10.65) and comparison (9.63) groups, (t = -.505, p = .615).

**Perceived susceptibility.** At T1, 37 (49.3%) participants identified as having some perception to being susceptible to AUD, with 19 (51.4%) individuals in the intervention group and 18 (47.4%) in the comparison group. The results show that the mean susceptibility score of the T1 study participants was 3.71 (s = .58, Mdn = 3.75), the mean susceptibility score for the intervention group was 3.75 (s = .57, Mdn = 3.75), and the mean susceptibility score for the
comparison group was 3.67 (s = .60, Mdn = 3.75). When comparing the mean scores at T1 between the intervention and comparison groups, the results of the paired T-test show that there was no significant difference in the perceived susceptibility scores at T1 between the intervention (3.75) and comparison (3.67) groups, (t = -.582, p = .562).

**Perceived seriousness.** At T1, 18 (24%) participants perceived the seriousness of continued alcohol use on their wellbeing as negative, with 14 (37.8%) individuals in the intervention group and 4 (10.5%) in the comparison group. The results show that the mean seriousness score of the T1 study participants was 3.51 (s = .75, Mdn = 3.50), the mean seriousness score for the intervention group was 3.70 (s = .72, Mdn = 4.00), and the mean seriousness score for the comparison group was 3.33 (s = .75, Mdn = 3.50). When comparing the mean scores at T1 between the intervention and comparison groups, the results of the paired T-test show that there was a significant difference in the mean perceived seriousness scores at T1 between the intervention (3.70) and comparison (3.33) group, (t = -2.200, p = .031). These results indicate that the mean perceived seriousness scores at T1 for the intervention group were statistically significantly more than the mean perceived seriousness scores for the comparison group, indicating that the participants in the intervention group perceived the seriousness of continued alcohol use on their wellbeing more negatively than the comparison group. Inspection of mean scores in Table 5.2 indicated higher seriousness mean score in the intervention group.

**Perceived benefit.** At T1, 28 (37.3%) participants perceived that decreasing or quitting alcohol use would be beneficial to their wellbeing, with 12 (32.4%) individuals in the intervention group and 16 (42.1%) in the comparison group. The results show that the mean benefit score of the T1 study participants was 3.54 (s = .79, Mdn = 3.50), the mean benefit score for the intervention group was 3.55 (s = .72, Mdn = 3.75), and the mean benefit score for the comparison group was
3.53 ($s = .87, Mdn = 3.50$). When comparing the mean scores at T1 between the intervention and comparison groups, the results of the paired T-test show that there was no significant difference in the perceived benefit scores at T1 between the intervention (3.55) and comparison (3.53) groups, ($t = -0.078, p = .938$).

**Perceived barrier.** At T1, 22 (29.3%) participants perceived that they would encounter too many barriers to decrease or quit drinking, with 9 (24.3%) individuals in the intervention group and 13 (34.2%) in the comparison group. The results show that the mean barrier score of the T1 study participants was 3.26 ($s = .97, Mdn = 3.25$), the mean barrier score for the intervention group was 3.33 ($s = .80, Mdn = 3.25$), and the mean barrier score for the comparison group was 3.19 ($s = 1.31, Mdn = 3.25$). When comparing the mean scores at T1 between the intervention and comparison groups, the results of the paired T-test show that there was no significant difference in the perceived barrier scores at T1 between the intervention (3.33) and comparison (3.19) groups, ($t = -.621, p = .536$).

**Participants with and without T2 data.** Because there was considerable loss to follow-up, comparisons were made on T1 values for outcome variables between those who provided T2 data and those who dropped out. When comparing T1 baseline sample characteristics for those who provided (n=28) T2 data versus those who did not (n=47), no statistical significance was reported at baseline for standard drinks, 6 or more standard drinks per occasion, past 90 day alcohol use (time spent drinking), hazardous drinking, readiness to change (precontemplation, contemplation, action), and perceived susceptibility, seriousness, benefit and barrier.

Results showed differences at T1 for PHQ-9 scores (depression) from those who provided T2 data and those who did not. Those who did not had a greater mean PHQ-9 depression score (11.74) versus those who followed up (7.43), ($t = 2.239, p = .029$), indicating
that the participants who did not follow-up reported that they were more depressed at baseline than those who did follow-up.

**Participants with T2 data.** Participants with T2 data compose the analysis sample for testing hypotheses. Intervention and comparison groups of participants with T2 data were compared to assess equivalence on T1 values for outcome measures. Groups differed significantly on only one variable, standard drinks on a typical day ($\chi^2 = 12.354$, $df = 4$, $p = .015$), with percentages indicating that the T2 analysis sample participants in the intervention group reported consuming more standard drinks containing alcohol on a typical day in the past 90 days than did those in the comparison group. Because of this difference, the analysis for hypothesis testing was expanded to include a comparison of T1 to T2 change for this variable. Intervention and comparison groups of participants with T2 data were statistically similar on all other outcomes measured at T1.

**Table 5.2 Sample Description Drinking Behavior, Readiness to Change, Depression, Health Beliefs ED Patients Enrolled in Brief Intervention for Alcohol Use at Time 1 (T1)**

<table>
<thead>
<tr>
<th>Sample Description Drinking Behavior Characteristics</th>
<th>Number (%)</th>
<th>Intervention T1 ($n = 37$) Number (%)</th>
<th>Comparison T1 ($n = 38$) Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total ($N = 75$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD on a typical day <strong>¹</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 or 2</td>
<td>6 (8.0%)</td>
<td>3 (8.1%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>3 or 4</td>
<td>10 (13.3%)</td>
<td>2 (5.4%)</td>
<td>8 (21.1%)</td>
</tr>
<tr>
<td>5 or 6</td>
<td>16 (21.3%)</td>
<td>3 (8.1%)</td>
<td>13 (34.2%)</td>
</tr>
<tr>
<td>7 or 9</td>
<td>7 (9.3%)</td>
<td>5 (13.5%)</td>
<td>2 (5.3%)</td>
</tr>
<tr>
<td>10 or more</td>
<td>36 (48%)</td>
<td>24 (64.9%)</td>
<td>12 (31.6%)</td>
</tr>
<tr>
<td>Six or more SD per occasion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>6 (8.0%)</td>
<td>3 (8.1%)</td>
<td>3 (7.9%)</td>
</tr>
<tr>
<td>Less than monthly</td>
<td>12 (16.0%)</td>
<td>4 (10.8%)</td>
<td>8 (21.1%)</td>
</tr>
<tr>
<td>Monthly</td>
<td>7 (9.3%)</td>
<td>5 (13.5%)</td>
<td>5 (13.2%)</td>
</tr>
<tr>
<td>Weekly</td>
<td>12 (16.0%)</td>
<td>23 (62.2%)</td>
<td>7 (18.4%)</td>
</tr>
<tr>
<td>Daily or almost daily</td>
<td>38 (50.7%)</td>
<td></td>
<td>15 (39.5%)</td>
</tr>
</tbody>
</table>

159
### Past 90 days alcohol use % (time spent drinking) *1

<table>
<thead>
<tr>
<th>Category</th>
<th>Never</th>
<th>Monthly or less</th>
<th>2-3 times/month</th>
<th>4 or more times/month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 (4.0%)</td>
<td>7 (9.3%)</td>
<td>13 (17.3%)</td>
<td>52 (69.3%)</td>
</tr>
<tr>
<td></td>
<td>3 (8.1%)</td>
<td>1 (2.7%)</td>
<td>7 (18.9%)</td>
<td>26 (70.3%)</td>
</tr>
<tr>
<td></td>
<td>6 (15.8%)</td>
<td>6 (15.8%)</td>
<td>26 (68.4%)</td>
<td></td>
</tr>
</tbody>
</table>

### Hazardous Drinking

<table>
<thead>
<tr>
<th>Category</th>
<th>Never</th>
<th>Monthly or less</th>
<th>2-3 times/month</th>
<th>4 or more times/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>2 (2.7%)</td>
<td>1 (2.7%)</td>
<td>7 (18.9%)</td>
<td>26 (70.3%)</td>
</tr>
<tr>
<td>Yes</td>
<td>73 (97.3%)</td>
<td>36 (97.3%)</td>
<td>26 (68.4%)</td>
<td></td>
</tr>
</tbody>
</table>

### Readiness to change stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Precontemplation</th>
<th>Contemplation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precontemplation</td>
<td>19 (25.3%)</td>
<td>40 (53.3%)</td>
<td>16 (21.3%)</td>
</tr>
<tr>
<td>Contemplation</td>
<td>8 (21.6%)</td>
<td>22 (59.5%)</td>
<td>7 (18.9%)</td>
</tr>
<tr>
<td>Action</td>
<td>11 (28.9%)</td>
<td>18 (47.4%)</td>
<td>9 (23.7%)</td>
</tr>
</tbody>
</table>

### Mean (sd), Median

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean (sd), Median</th>
<th>Mean (sd), Median</th>
<th>Mean (sd), Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIT-C/Risk for AUD *1</td>
<td>9.12 (2.87), 10.00</td>
<td>9.84 (2.88), 11.00</td>
<td>8.42 (2.71), 8.50</td>
</tr>
<tr>
<td>PHQ-9 Depression Score</td>
<td>10.13 (8.68), 11.00</td>
<td>10.65 (8.73), 10.00</td>
<td>9.63 (8.73), 11.00</td>
</tr>
<tr>
<td>Health Belief mean Score SUS</td>
<td>3.71 (.58), 3.75</td>
<td>3.75 (.57), 3.75</td>
<td>3.67 (.60), 3.75</td>
</tr>
<tr>
<td>Health Belief mean Score SER</td>
<td>3.51 (.75), 3.50</td>
<td>3.70 (.72), 4.00</td>
<td>3.33 (.75), 3.50</td>
</tr>
<tr>
<td>Health Belief mean Score BEN</td>
<td>3.54 (.79), 3.50</td>
<td>3.55 (.72), 3.75</td>
<td>3.53 (.87), 3.50</td>
</tr>
<tr>
<td>Health Belief mean Score BAR</td>
<td>3.26 (.97), 3.25</td>
<td>3.33 (.80), 3.25</td>
<td>3.19 (1.13), 3.25</td>
</tr>
</tbody>
</table>

*p = 0.01, **p = 0.001*  

**Summary of Data Analysis Findings T2 and T1 vs. T2**

**Sample sociodemographic characteristics.** Data analysis showed that all sociodemographic outcome measures for T2 between the intervention and comparison groups had no differences by age, drinking history (age at first drink), gender, race, Hispanic Latino Spanish origin, language spoken, marital status, education, work status, income, health care
coverage, and living situation. This finding revealed that the intervention and comparison groups at T2 were equivalent in sociodemographic characteristics.

**Test of Hypotheses**

In this section, results of hypothesis testing for Aims 1-3, comparing the intervention ($n = 11$) and comparison ($n = 17$) groups at T2 on specific outcome measures are presented (Table 5.3). In addition, changes from T1 to T2 are further described and examined within each group.

**Specific Aims**

**Specific Aims 1.** To assess the preliminary efficacy of a RN navigator delivered brief intervention (BI) on alcohol consumption, hazardous drinking, readiness to change alcohol use, and risk for AUD as compared with the comparison group at T2 (Time 2) 3-month follow-up.

**Hypothesis 1a.** The intervention group will report a significantly lower number of standard drinks on a typical day in the past 3 months than will the comparison group at T2 as measured by Item 2 on the AUDIT-C.

**Hypothesis accepted.** The initial results of a Wilcoxon Mann Whitney comparison at T2 indicated there was no difference for participants who reported past 90-day number of standard drinks on a typical day at T2, in the intervention group (median category=.00 [1-2 drinks]) versus the comparison group (median category=.00 [1-2 drinks]; $z = -0.52$, $p = .959$). However, because the T2 analysis sample differed significantly on this measure at T1, expanded analyses considered the change scores from T1 to T2. In terms of change, a Wilcoxon Mann-Whitney test showed a significant difference between the two groups ($z = -2.087$, $p = .037$), indicating a greater decrease in frequency of standard drinks for the intervention than for the comparison group (descriptive details in the next paragraph).
**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated significant improvement at T2 over T1, a decrease in number of standard drinks on a typical day in the past 90 days, with median categories of 4.00 (10 or more drinks) at T1 and .00 (1-2 drinks) at T2 ($z = -2.588, p = .010$). These results show that the standard drinks consumed at T2 were statistically significantly lower than the standard drinks consumed at T1, indicating that the participants at T2 drank at levels that were considered less risky for AUD.

Additionally, the results of a Wilcoxon signed ranks test for the follow-up comparison group indicated significant improvement at T2 over T1, a decrease in number of standard drinks on a typical day in the past 90 days, with median categories of 2.00 (5-6 drinks) at T1 and .00 (1-2 drinks) at T2, ($z = -2.622, p = .009$). These results show that the standard drinks consumed at T2 were statistically significantly lower than the standard drinks consumed at T1, indicating that the participants at T2 drank at levels that were considered less risky for AUD.

**Hypothesis 1b.** Participants in the intervention group will report that they consumed 6 or more standard drinks significantly less frequently in the past 3 months than the comparison group at T2 as measured by Item 3 on the AUDIT-C.

**Hypothesis rejected.** The results of a Wilcoxon Mann Whitney analysis indicated there was no statistically significant difference for participants who reported 6 or more standard drinks during a certain time period on one occasion at T2, in the intervention group (median category = .00 [never]) versus the comparison (median category=1.00 [less than monthly]; ($z = -.743, p = .458$).

**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated significant improvement at T2 over T1, a decrease in the
frequency of consumption of 6 or more standard drinks on a typical day in the past 90 days, with median categories of 4 (daily or almost daily) at T1 and 0 (never) at T2 respectively (z = -2.539, p = .011). These results show that the frequency 6 or more drinks consumed at T2 was statistically significantly lower than at T1, indicating that the participants at T2 drank at levels that were considered less risky for AUD.

Additionally, the results of a Wilcoxon signed ranks test for the follow-up comparison group indicated significant improvement at T2 over T1, for frequency of consuming 6 or more standard drinks on a typical day in the past 90 days, with median categories of 3.00 (weekly) at T1 and .00 (never) at T2, respectively (z = -2.504, p = .012). These results show that the frequency of 6 or more drinks consumed at T2 was statistically significantly lower than 6 or more drinks consumed at T1, indicating that the participants at T2 drank at levels that were considered less risky for AUD.

**Hypothesis 1c.** Participants in the intervention group will report drinking alcohol significantly less frequently in the past 3 months than the comparison group at T2 as measured by item one on the AUDIT-C.

**Hypothesis rejected.** The results of a Wilcoxon Mann Whitney analysis indicated there was no statistically significant difference, for participants who reported past 90-day alcohol use (time spent drinking) at T2, in the intervention group (median category=1.00 [monthly or less]) versus the comparison (median category = 2.00 [2-4 times a month]; z = -1.782, p = .075). However, for the intervention group at T2 one (9.1%) participant reported consuming alcohol 4 or more times a week; and for the comparison group 4 (23.5%) participant reported consuming alcohol 4 or more times a week.
Within-group improvement. The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated significant improvement at T2 over T1, for time spent drinking alcohol in the past 90 days, with median categories of 4.00 (4 or more times a week) at T1 and 1.00 (monthly or less) at T2 ($z = -2.448$, $p = .014$). These results show that time spent drinking at T2 was statistically significantly lower than time spent drinking at T1, indicating that the participants at T2 drank at levels that were considered less risky for AUD.

Additionally, the results of a Wilcoxon signed ranks test for the follow-up comparison group indicated statistically significant improvement at T2 over T1, for time spent drinking in the past 90 days, with median categories of 4.00 (4 or more times a week) at T1 and 2.00 (2-4 times a month) at T2 ($z = -2.946$, $p = .003$). These results show that time spent drinking at T2 was statistically significantly lower than time spent drinking at T1, indicating that the participants at T2 drank at levels that were considered less risky for AUD.

**Hypothesis 1d.** The proportion of participants who reported hazardous drinking in the past 3 months in the intervention group will be significantly lower than the comparison group at T2 as measured by the AUDIT-C.

**Hypothesis rejected.** The results of the Chi-Square indicated there was no difference in the proportion of participants who scored high enough to be considered hazardous drinkers or at risk for AUD in the past months at T2, in the intervention group versus the comparison, ($p = .636$).

Within-group improvement. The results show that there was statistically significant decrease for the intervention group at T2 from T1 in the proportion of participants who scored high enough to be considered hazardous drinkers or at risk for AUD (McNemar test, $p = .031$).
These results indicate that the participants at T2 drank at levels that were considered less risky for AUD.

The results show that there was no statistically significant difference for the comparison group at T2 from T1 in the proportion of participants who scored high enough to be considered hazardous drinkers or at risk for AUD (McNemar $p = .125$). However, for the follow-up comparison group, 16 (94.1%) scored high enough to be considered hazardous drinkers or at risk for AUD using the AUDIT-C at T1, and only 11 (64.7%) at T2 scored high enough to be considered hazardous drinkers or at risk for AUD using the AUDIT-C.

**Hypothesis 1e.** The intervention group will have significantly greater readiness to change to reduce alcohol use than the comparison group at T2 as measured by the readiness to change questionnaire.

**Hypothesis rejected.** The results of a Wilcoxon Mann Whitney analysis indicated there was no difference in readiness to change at T2, in the intervention group (median category=3.00 [action]) versus the comparison (median category=3.00 [action]), ($z = -0.390, p = .697$).

**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated significant improvement at T2 over T1, for readiness to change alcohol use, with median categories of 2.00 (contemplation) at T1 and 3.00 (action) at T2 respectively ($z = -1.994, p = .046$). These results show that readiness to change alcohol use at T2 were statistically significantly improved (more participants were in the action stage) than readiness to change at T1, indicating that the participants at T2 had a greater readiness to change alcohol use.

The results of a Wilcoxon signed ranks test for the follow-up comparison group indicated non-significant improvement at T2 over T1, in readiness to change alcohol use, with median
categories of 2.00 (contemplation) at T1 and 3.00 (action) at T2 respectively ($z = -1.543, p = .123$). However, in the follow-up comparison group, 6 (35.3%) participants were assessed into the precontemplation stage of change, 8 (47.1%) into the contemplation, and 3 (17.6%) into the action stage at T1; and at T2, 4 (23.5%) participants were assessed into the precontemplation stage of change, 4 (23.5%) into the contemplation stage, and 9 (52.9%) into the action stage.

**Hypothesis 1f.** The mean positive AUDIT-C scores that measure AUD risk among participants in the intervention group will be statistically significantly lower than that of the AUDIT-C risk scores in the comparison group at 3-months follow-up as measured by the AUDIT-C.

**Hypothesis rejected.** The results of a Wilcoxon Mann Whitney analysis indicated there was no significant difference in the distribution of AUDIT-C scores for participants at T2 in the intervention group (median category=3.00 [positive hazardous drinking for women]) versus the comparison (median category=4.00 [positive hazardous drinking for both men and women]), ($z = -1.329, p = .184$).

**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated significant improvement at T2 over T1, for proportion of participants who scored less on the AUDIT-C for hazardous drinking, with median categories of 12 at T1 and 3 at T2 respectively ($z = -2.524, p = .012$). These results show that AUDIT-C scores for the intervention group at T2 were statistically significantly lower than AUDIT-C scores at T1, indicating that the participants at T2 drank at levels that were considered less hazardous and risky for AUD. Additionally, the results of a Wilcoxon signed ranks test for the follow-up comparison group indicated significant improvement at T2 over T1, for proportion of participants who scored less on the AUDIT-C for hazardous drinking, with median categories of
8.00 at T1 and 4.00 at T2 respectively \((z = -3.084, p = .002)\). These results show that AUDIT-C scores for the comparison at T2 were statistically significantly lower than AUDIT-C scores at T1, indicating that the participants at T2 drank at levels that were considered less hazardous and risky for AUD.

**Specific Aims 2.** To assess the preliminary efficacy of a RN navigator delivered brief intervention (BI) for patients with AUD on depressive symptoms/feelings as compared with the comparison group at 3-months follow-up (T2).

**Hypothesis 2a.** The mean depression scores that measure depressive symptoms/feelings among participants in the intervention group will be statistically significantly lower than that of the depression scores in the comparison group at T2 as measured by the PHQ-9.

**Hypothesis rejected.** The results of a Wilcoxon Mann Whitney analysis indicated there was no significant difference in PHQ-9 depressive scores for participants at T2 in the intervention group (median category=17.05 [moderately severe depression]) versus the comparison (median category=12.85 [moderate depression]), \((z = -1.415, p = .157)\).

**Within-group improvement.** The results of the paired \(t\)-test for the follow-up intervention group indicates that the mean of T1 PHQ-9 score [(6.82, mild depression)] is not statistically significantly different from the mean of T2 PHQ-9 score [(4.73, minimal depression)], \((t = 1.101, p = .297)\), however, for the follow-up intervention group, 7 (63.6%) participants were assessed as having minimal depression, at T1; and at T2, 9 (81.8%) participants were assessed as having minimal to no depression.

The results of the paired \(t\)-test for the follow-up comparison group indicates that the mean of T1 PHQ-9 score [(7.82, mild depression)] is statistically significantly higher than the mean of T2 PHQ-9 score (2.24, minimal depression)], \((t = 2.621, p = .019)\). In the follow-up comparison
group, 8 (47%) participants were assessed as having minimal to no depression at T1; but at T2 13 (76.5%) were assessed as having minimal to no depression. These results indicate that the mean PHQ-9 scores at T2 were statistically significantly lower than the PHQ-9 scores at T1 in the comparison group, indicating that the participants at T2 in the comparison group reported having been less depressed.

**Specific Aims 3.** To assess the preliminary efficacy of a RN navigator delivered BI to increase individual’s with AUD risk perceived susceptibility, perceived seriousness, perceived benefits, and to decrease perceived barriers on AUD risk, as compared with the comparison group, at 3-months follow-up.

**Hypothesis 3a.** The level of perceived susceptibility, seriousness and benefit to AUD of an alternative action will be significantly higher among patients in the intervention group compared to those of those in the comparison group at T2 (3 months follow-up) as measured by the HBMI-R.

**Hypothesis rejected--susceptibility.** The results of a Wilcoxon Mann Whitney analysis indicated there was no significant difference in the perceived susceptibility scores for participants at T2 in the intervention group (median category=4.00) versus the comparison (median category=4.00; z = -.047, p = .962).

**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated non-significant improvement at T2 over T1, for perceived susceptibility scores, with median categories of 3.75 at T1 and 4.00 at T2 respectively (z = -1.069, p = .285), but this movement was not statistically significant.

The results of a Wilcoxon signed ranks test for the follow-up comparison group indicated significant improvement at T2 over T1, for perceived susceptibility scores, with median
categories of 3.75 at T1 and 4.00 at T2, respectively ($z = -2.156, p = .031$). These results indicate that the perceived susceptibility scores at T2 were statistically significantly greater than the perceived susceptibility scores at T1 in the comparison group, indicating that the participants at T2 in the comparison group had greater perceived susceptibility to their wellbeing with continued alcohol use than those at T1.

**Hypothesis accepted--seriousness.** The results of a Wilcoxon Mann Whitney analysis indicated there was a statistically significant difference for the perceived seriousness scores for participants at T2 in the intervention group (median category=4.00) versus the comparison (median category=3.50; $z = -2.681, p = .007$). The results indicated that the level of perceived seriousness of continued alcohol use on the well-being of participants in the intervention group was significantly higher than those in the comparison group at T2. The participants believed the desire for needing and using alcohol was a problem that would have negative effects on their health and may cause them to be sick a lot. Additionally, they believed that they would need to always keep away from alcohol.

**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated no improvement at T2 over T1, for perceived seriousness scores, with median categories of 3.75 at T1 and 4.00 at T2 respectively ($z = -0.877, p = .380$).

The results of a Wilcoxon signed ranks test for the follow-up comparison group indicated improvement at T2 over T1, for perceived seriousness scores, with median categories of 3.25 at T1 and 3.50 at T2 respectively ($z = -1.385, p = .166$), but this difference was not statistically significant.

**Hypothesis rejected--benefits.** The results of a Wilcoxon Mann Whitney analysis indicated there was no significant difference in the perceived benefits scores for participants at
T2 in the intervention group (median category=4.00) versus the comparison (median category=3.75; \( z = -0.805, p = .421 \)).

**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated borderline significant improvement at T2 over T1, for perceived benefits scores, with median categories of 3.75 at T1 and 4.00 at T2 respectively, \( (z = -1.948, p = .051) \). These results indicate that the mean benefits scores at T2 were borderline statistically significantly greater than the mean benefits scores at T1 in the intervention group, indicate the intervention group at T2 reported greater benefits to their wellbeing if they decrease or did not drink alcohol.

The results of a Wilcoxon signed ranks test for the follow-up comparison group indicated no improvement at T2 over T1, for perceived benefit scores, with median categories of 3.75 at T1 and 3.75 at T2 respectively, \( (z = -.602, p = .547) \).

**Hypothesis 3b.** The level of perceived barriers to AUD risk will be significantly lower among participants in the intervention group than that of patients in the comparison group at 3 months follow-up as measured by the HBMI-R.

**Hypothesis rejected.** The results of a Wilcoxon Mann Whitney analysis indicated there was no significant difference in the perceived barrier scores for participants at T2 in the intervention group (median category=3.00) versus the comparison (median category = 2.25; \( z = -1.421, p = .155 \)).

**Within-group improvement.** The results of a Wilcoxon signed ranks test for the follow-up intervention group indicated no improvement at T2 over T1, for perceived barrier scores, with median categories of 3.00 at T1 and 3.00 at T2 respectively \( (z = -.847, p = .397) \).
The results of a Wilcoxon signed ranks test for the follow-up comparison group indicated significant improvement at T2 over T1, for perceived barrier scores, with median categories of 3.25 at T1 and 2.25 at T2 respectively, (z = -2.347, p = .019). These results indicate that the perceived Barrier scores at T2 were statistically significantly less than the Barrier scores at T1 in the comparison group, indicating that the comparison group at T2 reported less barriers to decreasing or quitting alcohol use as compared to T1.

Table 5.3

Sample Description/Hypothesis Testing Drinking Behavior, Readiness to Change, Depression, Health Beliefs ED patients Enrolled in Brief Intervention for Alcohol Use at Time 1 (T1) and Time 2 (T2) for follow-up Comparison and Intervention Groups

<table>
<thead>
<tr>
<th>Sample Description Drining Behavior Characteristics</th>
<th>Intervention T1 (n =11) Number (%)</th>
<th>Comparison T1 (n =17) Number (%)</th>
<th>Intervention T2 (n =11) Number (%)</th>
<th>Comparison T2 (n =17) Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD on a typical day, 0/2/3</td>
<td>1 (9.1%)</td>
<td>3 (17.6%)</td>
<td>6 (54.5%)</td>
<td>9 (52.9%)</td>
</tr>
<tr>
<td>1 or 2</td>
<td>1 (9.1%)</td>
<td>4 (23.5%)</td>
<td>3 (27.3%)</td>
<td>5 (29.4%)</td>
</tr>
<tr>
<td>3 or 4</td>
<td>1 (9.1%)</td>
<td>6 (35.3%)</td>
<td>1 (9.1%)</td>
<td>1 (5.9%)</td>
</tr>
<tr>
<td>5 or 6</td>
<td>1 (9.1%)</td>
<td>1 (5.9%)</td>
<td>1 (9.1%)</td>
<td>1 (5.9%)</td>
</tr>
<tr>
<td>7 or 9</td>
<td>8 (72.7%)</td>
<td>3 (17.6%)</td>
<td>1 (9.1%)</td>
<td>1 (5.9%)</td>
</tr>
<tr>
<td>10 or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Description Drining Behavior Characteristics</td>
<td>6 or more SD per</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>occasion *2/*3</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
</tr>
<tr>
<td>---------------</td>
<td>--------</td>
<td>-------------------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>1 (9.1%)</td>
<td>1 (9.1%)</td>
<td>1 (9.1%)</td>
<td>2 (18.2%)</td>
</tr>
<tr>
<td></td>
<td>1 (9.1%)</td>
<td>5 (29.4%)</td>
<td>2 (11.8%)</td>
<td>3 (17.6%)</td>
</tr>
<tr>
<td></td>
<td>6 (54.5%)</td>
<td>6 (35.3%)</td>
<td>2 (18.2%)</td>
<td>2 (11.8%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Past 90 days alcohol use % (time spent drinking) *2/*3</th>
<th>Never</th>
<th>Monthly or less</th>
<th>2-4 times/month</th>
<th>2-3 times/week</th>
<th>4 or more times/week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 (18.2%)</td>
<td>3 (27.3%)</td>
<td>1 (5.9%)</td>
<td>1 (9.1%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (9.1%)</td>
<td>3 (27.3%)</td>
<td>2 (18.2%)</td>
<td>6 (35.3%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (9.1%)</td>
<td>2 (18.2%)</td>
<td>2 (18.2%)</td>
<td>4 (23.5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 (63.6%)</td>
<td>12 (70.6%)</td>
<td>1 (9.1%)</td>
<td>4 (23.5%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous Drinking *2</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 (9.1%)</td>
<td>10 (90.9%)</td>
</tr>
<tr>
<td></td>
<td>1 (5.9%)</td>
<td>16 (94.1%)</td>
</tr>
<tr>
<td></td>
<td>7 (63.6%)</td>
<td>4 (36.4%)</td>
</tr>
<tr>
<td></td>
<td>6 (35.3%)</td>
<td>11 (64.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Readiness to change stage *2</th>
<th>Precontemplation</th>
<th>Contemplation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 (36.4%)</td>
<td>6 (35.3%)</td>
<td>1 (9.1%)</td>
</tr>
<tr>
<td></td>
<td>6 (54.5%)</td>
<td>8 (47.1%)</td>
<td>4 (36.4%)</td>
</tr>
<tr>
<td></td>
<td>1 (9.1%)</td>
<td>3 (17.6%)</td>
<td>6 (54.5%)</td>
</tr>
<tr>
<td></td>
<td>4 (23.5%)</td>
<td>4 (23.5%)</td>
<td>9 (52.9%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean (sd), Median</th>
<th>Mean (sd), Median</th>
<th>Mean (sd), Median</th>
<th>Mean (sd), Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIT-C/Risk for AUD *2/**3</td>
<td>9.45 (3.59), 12.00</td>
<td>7.88 (2.78), 8.00</td>
<td>3.45 (3.80), 3.00</td>
</tr>
</tbody>
</table>
Specific Aims 4. To explore the feasibility of a nurse navigator delivered intervention on AUD risk and alcohol consumption at 3-month follow-up.

Recruitment of Nurse Navigators

Nurse navigator’s buy-in. All four nurse navigators were asked if they would be willing to participate in the study via email and in person and were also informed that participation was optional. All four nurse navigators reported that the study proposal would be acceptable practice for their team. They all felt that the proposal was feasible since they were already screening, and providing resources for patients with AUD. All four nurse navigators were encouraged that they would be provided the SBIRT training course and felt it would help in their current role when working with patients with AUD. Although there were some constraints to the delivery of the BI, it was feasible to administer to the participants in the study. The nurse navigators were already established in the ED, the patients with AUD were already being referred to them, and they were
already providing information to the patients, and providing referrals into the community for treatment.

At baseline, 49.3% of the participants consumed alcohol weekly or less and 42.7% admitted to drinking 6 or less drinks when they did consume alcohol. Additionally, 66.7% of the participants showed interest in the information being provided to them. In the current study, unlike when the nurse navigators are asked to see patients who consumed alcohol in excess outside the study, due to certain exclusion criteria, the nurse navigators did not have to wait for participants to metabolize and get cleared for suicidal ideations prior to providing the BI. Therefore, all four nurse navigators voiced that they felt they were able to sit and have a discussion with most of the participants and that made the study feel successful to them. This brings up an interesting point of who would benefit from receiving the BI in the ED.

**Tracking intervention time.** The nurse navigators recommended that the PI should designate an area in the study documents where the nurse navigators could record the length of time it took to conduct each patient intervention for feasibility tracking purposes. A tracking form was developed which provided the average time it took to conduct the BI or usual care in the ED by the nurse navigators. For the intervention group, the average time to deliver the brief intervention was about 16 minutes, range 5-30 minutes. This included information that was provided to the participants and referral to treatment if needed. These data were collected on 37 patients with a total of 580 minutes. The average time to deliver usual care for the comparison group in addition to providing a handout on diet and exercise was about 8 minutes, range two-ten minutes. These data were collected on 35 patients with a total of 276 minutes. The time to administer the BI was acceptable to all four nurse navigators, since they had been informed initially that the BI would take anywhere from 5-15 minutes. Although one navigator did voice
frustration that 30 minutes was too long to spend with one patient. The 30-minute and 10-minute outliers for both the intervention and comparison groups were related to patient needs related to housing, ordering durable equipment, and finding a primary care home. On average, the BI did take longer than the usual care and the nurse navigators shared that on a busy day it would be difficult to do the BI if they had several other referrals for patient needs, such as placement of an elderly patient in a nursing home.

Constraints

Training. Training for the nurse navigators was particularly important, because it provided them understanding of the prevalence for AUD and informed them that not everyone who drinks is an excessive drinker, only 9% drink excessively daily (NIAAA, 2019). In addition, training provided understanding of the criteria for risky use to capture those patients that may be drinking at levels that put them at risk for illness and injury. Furthermore, training equipped the nurse navigators with understanding of the effects of AUD on the health and mental health of persons who drink in excess. The nurse navigators learned to use the information gained from the patients’ current health issues as a discussion point when talking about decreasing or quitting alcohol use. Lastly, training provided an understanding of how to deliver the BI to included motivational interviewing and how the nurse navigator could help this vulnerable patient population develop a plan to cut down or quit alcohol use.

Training of the four nurse navigators was met with a couple of constraints related to time, however, for the most part, there were no roadblocks. The first training constraint involved the nurse navigators making the time to obtain an IRB account so that they could be added to the IRB application. The online IRB training took one of the navigators 2 weeks to complete, 2 navigators 1 month, and 1 navigator 2 months. Roadblocks to getting the IRB account were
related to the Collaborative IRB Training Initiative (CITI) modules being completed during working hours. One Navigator did the wrong CITI modules and had to go back and complete the correct ones. The commotion of the ED was another factor in freeing up the navigators to get to or back to the modules to complete.

The second training constraint involved finding a time to schedule all the nurse navigators to meet on one day to decreased training days, this way the nurse navigators could receive the same message and hear each other’s questions. In the end, the PI met with each nurse navigator 4 separate times for a total of 16 times.

**Day 1.** The PI met with each of the four nurse navigators separately for one-hour to ensure all of them were providing the same usual care.

**Day 2.** The PI met with each of the four nurse navigators separately for 30-minutes to provide them with a packet of slides and tools to use during the 4-hour SBIRT training course on-line.

**Day 3.** The PI met with each of the four nurse navigators for two-hours prior to any collection of data from the intervention group. This meeting was the most challenging, as it was a change in practice, and the concept of providing a brief intervention was new information that had not been shared with the navigators previously. A guided script was provided and reviewed. Additionally, a booklet from the NIAAA was provided titled, “Rethinking Drinking”. In the end, the concept of providing a brief intervention to someone who may not want assistance was daunting to them.

**Day 4.** The PI met with each of the four nurse navigators for their first encounter with the participants enrolled into the intervention study. The PI went over the script one more
time with each of them, and then went into the patient’s room with each nurse navigator in case they needed any guidance.

**Navigator availability.** For most of the recruitment period for the comparison group, four nurse navigators were hired to work in the ED and assisted with usual care. For most of the recruitment period for the intervention group, three nurse navigators were available to assist with the BI.

Recruitment for the comparison group started in February 2018 and ended in August 2018. During this study period three nurse navigators were available February - April 2018 and four nurse navigators were available April 2018 – August 2018.

Recruitment for the intervention group started in September 2018 and ended in August 2019. During this study period four nurse navigators were available September 2018 – December 2018 and three nurse navigators were available December 2018 - August 2019. One nurse navigator left the department to work on the inpatient units, the other three were available to provide the BI or usual care for the remaining months of the study period.

Three observations were made regarding the frenzied ED, the nurse navigator staffing and their availability that hindered providing the BI or usual care to participants.

1. **Busy ED.** If the ED was too busy, the nurse navigators were not able to recruit. In the IRB application, and for the uniqueness of this study, it was vital that the PI utilize the nurse navigators working in the ED to provide the BI.

2. **Nurse navigator’s staffing.** Navigators were only available between the hours of 0600 to 2200 during the week, and only one navigator was available from 0600 to noon and 1700-2200 with limited coverage on weekends and holidays.
3. **Unavailability.** If there was a sick call, leave of absence or vacation, the nurse navigators worked limited hours until 1800, this was also the case during the weekend.

**Recruitment of Patients**

**Referrals of study participants.** It was feasible to get the RNs and Licensed Independent Practitioners (Physicians, Nurse Practitioners, and Physician Assistance) to refer patients to the PI. Some constraints noted were when the ED was busy and patients were being discharged quickly to make room in the ED for other patients waiting to be evaluated or when ambulances were rolling in. Both the RNs (N=1,318) and the Licensed Independent Practitioners (N=877) referred patients to the PI for the study when the patients showed interest in the study. More RNs had the opportunity to refer the patients because there were more RNs in the ED, they spent more time with the patients and the PI had more contact with them.

A log was created to keep track of all participants approached during the study period. The log contained information on how many patients were approached and how many were enrolled and not enrolled. Additionally, the log kept track of the exclusion criteria met for each individual excluded from the study, which participants followed up, and which health care provider referred the patients to the PI.

**Contacts approached.** The number of contacts to recruit one patient was on average 51 (1898 patients approached, and 37 patients enrolled) into the intervention group. The number of contacts to recruit one patient was on average 8 (297 patients approached, and 38 patients enrolled) into the comparison group. These numbers indicated that it took longer to recruit participants in the intervention group than it did in the comparison group. This is seen by the number of months it took to recruit participants in each group: 12 months for recruiting 37
participants into the intervention group and 6 months for recruiting 38 participants into the comparison group.

**Excluded from the study.** Several exclusion criteria did not allow the PI to approach and recruit potential participants into the study. The following five observations for these exclusions were documented.

1. **Admission.** Most of the exclusions were due to the patients being admitted to the hospital (N = 226). These individuals would have been evaluated for their alcohol use by both a social worker and a substance use disorder nurse, which could have affected the outcome at follow-up.

2. **Intoxication or withdrawal.** Some patients that may have qualified for the study were either intoxicated or suffering from alcohol withdrawal (N = 162). This exclusion was for legal and ethical reasons, as intoxicated individuals could have had impaired judgment that would have compromised their ability to consent. These patients have longer length of stays in the ED, because they are housed in the ED to metabolize the alcohol in their system and improve their alertness prior to discharge.

3. **Mental disorder.** Several patients were suffering from a mental disorder such as suicidality or psychosis (N = 125) therefore unable to make sound decisions and were either bedded in a specialty suite in the ED or admitted for further treatment.

4. **Other exclusions.** Some patients were on a legal hold and/or arrested (N = 38). If the patient was in custody of any law enforcement agency consent was unobtainable.

Furthermore, patients with altered mental status such as agitation, aggression, or violence (N = 37) were excluded for the safety of the PI and the nurse navigators. Additionally,
because a few were trauma or assault victims (N = 7) they were excluded due to the severity of their injuries.

5. Did not meet inclusion. Of the 2,120 patients that were excluded, 1,176 did not meet inclusion criteria because they did not meet AUD criteria.

Follow-up. The attrition rate for this intervention study was 62.7%: 28 out of the 75 participants recruited were successfully followed up. The attrition rate for the intervention group was 70.3%, with 11 out of 37 participants followed-up and the attrition rate for the comparison group was 55.3%, with 17 out of 38 participants followed-up.

Follow-up Methods

This study revealed how difficult it was to set up a follow-up interview with this vulnerable population, which resulted in the higher attrition rate in this study compare to the attrition reported in the literature. Each participant received a text reminder at 1 month, then 2 months, and then a week prior to setting up a follow-up interview. If the participant did not respond to the text, then an email was sent if email address was provided. Additionally, if the participant did not respond via email, then a phone call was attempted to speak with them in person.

Three observations were noted of why participants were lost to follow-up: Invalid contact information provided, participant lost interest, and friends lost contact with the participant.

1. Invalid information. Of those that were lost to follow-up, 17 (45.9%) in the intervention group and 13 (34.2%) in the comparison group had provided contact information that was no longer valid.

2. Lost interest. Five (13.5%) in the intervention group and 4 (10.5%) in the comparison group did not want to participate.
3. **Lost contact.** Four (10.8%) of the participants in the intervention group and 4 (10.5%) in the comparison group who had provided contact information for a relative or friend were lost to follow-up because their relative or friend lost contact with them.

Twenty-four (32.0%) of the participants who were interested in the information provided by the navigator did follow-up. Another 26 (34.7%) of the participants who were interested in the information provided did not follow-up. Four (5.3%) of the participants who were not interested in the information provided followed up and 21 (28.0%) of the participants who were not interested in the information provided did not follow-up.

In summary, the study results indicated it was feasible for the nurse navigators to deliver the BI for patients at risk for AUD. Although only one study aim’s hypothesis was statistically significant at follow-up between the intervention and comparison group, there were several outcomes that were improved. The nurse navigators shared that the BI was feasible to conduct in the ED and that the training increased their knowledge. They shared that the NIAAA booklet, “Rethinking Drinking” will be used when providing BI moving forward with patients showing interest in cutting down or ceasing alcohol use. In the end, nurses must be ready for the challenge to care for this patient population and training them to meet that challenge is key to successful treatment of patients who present to the ED with AUD.
Chapter 6: Discussion

The findings of this, non-equivalent, two-group, quasi-experimental pilot study provide insight into the efficacy of a nurse-led brief intervention (BI) to reduce alcohol consumption and dependency among individuals presenting to the emergency department (ED) with a risk for alcohol use disorder (AUD). After enrollment in our nurse-led study in the ED, results showed that participants between the intervention and comparison groups reported a lower number of drinks over time and an increased awareness of how alcohol could affect their health. Significant difference was also found over time within both the intervention and comparison groups. While other improvements did not reach significance, members of both groups in our study reported improved outcomes related to their awareness of the dangers of drinking and actual behaviors related to using alcohol. Thus, overall, our findings suggest that nurse-led interventions done in the ED hold great promise for improving the health of patients with AUD.

Ours was the first known study to assess the initial efficacy of a BI by nurse navigators in the ED to reduce alcohol use for patients at risk for AUD. Since the nurses in our study were not bedside nurses, they had no direct patient-care assignments. Other studies that included staff nurses with bedside responsibilities who provided the BI resulted in low compliance with BI completion on all patients (Drummond et al., 2014; Slain, 2014). The nurse navigators in our study were consulted for comprehensive reviews and to manage patients with complex medical issues, their role was to identify patients at risk for unnecessary admission to the hospital or readmission to the ED after discharge. Since patients at risk for AUD represent a vulnerable population (e.g., poor, homeless, mentally ill) who have difficulty accessing programs for recovery, ED nurses are the first professional health care provider that these patients encountered in the EDs. Nurses comprise a large portion of ED staff, so they were in a prime position to
conduct the BI. As was found by other researchers, the nurses on our team also helped remove barriers to care by navigating complicated insurance issues, providing information about community resources, and identifying sources for patients to access primary care (Pautasso, Zelmanowicz, Flores, & Caregnato, 2018).

We are not alone in achieving positive results in a nurse-led intervention. In several studies with cancer patients, various authors have reported positive outcomes using a nurse navigator (Campbell, Craig, Eggert, & Bailey-Dorton, 2010; Pedersen & Hack, 2010; Wagner et al., 2014). Additionally, nurses are influential, trusted, and can be trained to provide consistent and reliable BIs (WHO, 2010).

**Feasibility**

Our study established the feasibility of nurse navigators providing a BI to the experimental group in the ED. In fact, all enrolled participants actually received the BI, unlike in other intervention studies wherein bedside staff did not achieve this success (Slain et al., 2014). Furthermore, the average time to deliver the BI to members of our intervention group was consistent with that in a study by (Aronson, 2015) and that by (Moyer, 2013).

**Significant Findings and Improvements**

While our results showed positive improvements in both groups for outcome variables at the 3-month follow-up, our findings at baseline and at the 3-month follow-up for the intervention and comparison groups showed significant differences in lower number of drinks over time and an increased awareness of how alcohol could affect their health. Interestingly, there were also significant differences in baseline data on the level of depression when comparing participants who were reached for follow-up compared to those who were lost to follow-up.
Comparison of baseline and 3-month follow up. Three months after the intervention, the intervention group reported drinking significantly fewer standard drinks on a typical day and having a higher perception of the seriousness of their drinking in contrast to the comparison group. This is especially noteworthy in that participants in the intervention group drank more at Time 1 (indicating hazardous drinking) than the comparison group. However, the intervention seems to have been more effective for overall drinking behaviors and less effective in relation to heavy drinking (hazardous) behaviors that placed the patient at risk for AUD, as findings did not show significant difference in hazardous drinking. Knox, et al. (2019) reported similar findings.

This is the first study to assess the HBM constructs in the ED with patients with AUD. Using the model, perceived seriousness of alcohol use was a construct based on the individual’s perception or subjective belief of the seriousness or severity of the disease and the possibility of harm from continued drinking or heavy drinking. As was already noted, the perceived seriousness scores of the intervention group were significantly higher at 3-month follow-up compared to scores from members of the comparison group. During the BI, participants in the intervention group received the *Rethinking drinking* booklet from the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2019) which provided cues that could have improved participants’ awareness of the seriousness of continuing to use alcohol. The booklet’s content focused on the seriousness and risk of injury and illness at the baseline consumption level of the participants and the effect on their health and wellbeing by decreasing or ceasing alcohol use, although participants already could have been familiar with AUD difficulties and how their day-to-day life was affected by drinking (Hayden & Patterson, 2009; Sherma, 2011). Nonetheless, the information contained in the booklet could have served as a reminder of the seriousness of alcohol use, stimulating cues to action (Croff & Clapp, 2015; Hayden & Patterson, 2009; Jones
et al., 2015; Sullivan, Tetrault, Braithwaite, Turner, & Fiellin, 2011). Also, using national drinking patterns during the BI, participants who drank more than either the single-day limits, weekly limits, or both were informed that they were at increased risk or at highest risk for injuries, health problems, and AUD. Participants could have already known that heavy drinking was a serious problem, that it was having a negative effects on their health, and that it was causing their ill-health. However, the discussion of drinking norms may have increased their understanding of the gravity of their drinking habits (Bardsley & Beckman, 1988).

As was found in other studies, the BI could also have challenged the intervention group’s beliefs that their drinking was no more than normal or that they were not susceptible to health issues (Champion, Lewis, & Myers, 2015; Champion et al., 2015). Participants could have perceived that their alcohol use was under control or, conversely, that they would always be susceptible to uncontrolled desires and cravings. Both groups scored lower on the Health Belief barrier construct indicating that they perceived fewer obstacles to decreasing or quitting alcohol use. Also, the comparison group scored lower on perceived seriousness and benefits at 3 month follow-up time point which suggest that they did not perceive alcohol use could negatively affect their health and wellbeing, or that decreasing or quitting alcohol use would not be beneficial because they had no control over its use.

Perhaps more significant results would have been found with a larger sample size or a lower number or participants who were lost to follow-up. It is possible that the BI could have been more effective if the nurse navigators had contact with susceptible patients at every ED visit because it may have led them to build a more trusting relationship with the patient over time. However, it is doubtful that a longer intervention would have improved outcomes based on findings reported by Drummond and colleagues (2014).
**Alcohol consumption at 3-month follow-up.** By comparing the findings from baseline to 3-month follow-up for each group (within-each comparison), results showed a significant difference in alcohol use at 3-month follow-up within both the intervention and comparison groups. The intervention group reported significantly less hazardous drinking, significantly more readiness to change and a significantly improved perception of the benefits of not drinking. Furthermore, the comparison group reported significantly improved depression levels, significantly higher levels of perceived susceptibility indicating they believed that decreasing alcohol would help prevent complications of alcohol use, and significantly fewer perceived barriers to stopping use of alcohol. Results showed differences that were not significant but indicated improvement for both groups. That is, all participants reported drinking fewer standard drinks, less often drinking 6 or more standard drinks on a day, lower past 90-day alcohol use/time spent drinking, and lower AUDIT-C scores which indicates a lower risk for AUD.

Both groups could have reported decreased alcohol use because of Social desirability and self-report bias; participants might have answered the questions favorably at the beginning to qualify for the study due to the compensation or to please the researcher and be viewed as a favorable participant (Latkin, Edwards, Davey-Rothwell, & Tobin, 2017). Participants could have responded that they decreased alcohol use to be assessed as following their BI plan. Additionally, the comparison group was not blinded to the purpose of the study. While the comparison group received a handout on diet and exercise, all participants were asked about dieting to lose weight, the number of days per week they exercised for at least 20 minutes, and a set of questions related to their health. Additionally, there was a questionnaire related to depression. If screening in the ED electronic health record included mandatory forced field
AUDIT-C questions, then retrospective studies could examine patients blinded to an alcohol study.

For the significant within-group alcohol consumption results at 3-month follow-up in the comparison group, perhaps providing the alcohol information booklet could have sparked a conversation with the nurse navigator resulting in follow-up with community resources. Perhaps nurses merely asking questions about one’s alcohol use and the nurse showing that they care helped with decreasing alcohol use (Barata et al., 2017).

Recall bias might have affected reporting the quantity of alcohol consumed at follow-up versus baseline, particularly for those participants whose drinking was less frequent. These participants could have less recall than those who consumed at riskier levels. Recall bias cannot be overlooked for participants when less-frequent drinking was reported (Cherpitel, Stockwell, Vallance, & Chow, 2018b).

**Depression at 3-month follow-up.** Depression scores (PHQ-9), improved over time for the members of the comparison group in this study, but not for the intervention group. However, participants in the comparison group reported significantly higher depression scores at baseline. While they could have had more room for improvement at follow-up (e.g., regression towards the mean), it is also possible that the increased awareness of the seriousness of their disease experienced by the intervention group worked against improving depression scores. Those individuals could be depressed because of their perceived seriousness of having the chronic condition of AUD. When study participants were aware of the seriousness of AUD, it is also possible the increased awareness of the possibility of harm (coronary artery disease, hypertension, stroke) from continued drinking may have affected their psychological wellbeing (Kessler & Bromet, 2013).
**Baseline depression for participants lost to follow-up.** Depression or psychological issues may have played a role in terms of who did and did not participate in our study. For example, depression scores were significantly higher at baseline for participants who did not follow up when compared to participants who did follow up. This may have indicated that participants who did not follow-up may have been consuming alcohol at risky levels to mask their depression and may have had a more difficult time with follow-up (Kessler & Bromet, 2013). The intervention group, which had a higher mean depression score, had a higher attrition rate. Examining the efficacy of BI on the level of depression and drinking behaviors warrant further research.

Another concern that may have influenced results is homelessness. More participants in the intervention group reported being homeless compared to those in the comparison group for our study. Also, a higher percent of participants who did not follow-up in the study were homeless.

In summary, members of both groups in this nurse-led study had overall improvement in their drinking-behavior outcome variables; however, only results from the intervention group reached statistical significance. Less participants overall reported hazardous drinking levels and more reported increased readiness to change their alcohol use at the 3-month follow-up. These results have been seen in other studies examining BI for patients at risk for AUD (Connors, Di Clemente, Velasquez, & Donovan, 2013; Drummond et al., 2014; Korcha et al., 2012; Landy et al., 2016; Lotfipour et al., 2013; Williams, Horton, Samet, & Saitz, 2007; Sitz 2014).

**Limitation of the Study**
Limitations to our research included the representativeness of our sample, recruitment of patients with AUD in the ED, attrition rate, enrollment of study groups at different time periods, and social desirability and self-report bias. These limitations are discussed below.

**Representativeness of sample.** Our study was a convenience sample with a larger urban population who presented to the ED. Only one ED setting was used for this study capturing fewer demographic characteristics of elderly persons, Hispanics, and suburban population. The participants might not have been a representative sample of the population served. Demographic characteristics of the participants in this study were similar to other studies found in the literature: the age of the participants was, on average, in the mid-40s; male; Caucasian; and lower-social economic status (Mullins, Mazer-Amirshahi, & Pines, 2017; White, Slater, Ng, Hingson, & Breslow, 2018).

The average age that participants reported having their first alcoholic drink was 18 years, this age was slightly higher in the comparison group, and higher than both the United States and globally as reported by (Knox, Hasin, Larson, & Kranzler, 2019). A higher percentage of participants in the comparison group admitted to having their first drink prior to the age of 21 years. A participant in the intervention group admitted to having their first alcoholic beverage at the age of 10.

**Recruitment.** Although our study was feasible to conduct for the ED, there were several hindrances to the recruitment of participants. (Aldridge & Charles, 2007; Gabriels, Macharia, & Weich, 2019). The investigator recruited participants during the busiest times and with only one navigator to assist with the BI. These times coincide with a full-capacity ED, including the need to assign patients to hallway beds. Hindrances to recruitment included quick ED bed turnover, lack of privacy, patients tired of waiting, or patients presenting with severe injury and illnesses.
In the environment of the ED, a patient’s condition on arrival could excluded them from being enrolled (e.g., intoxication, mental disorders). Enrollment was hampered by exclusion criteria meant to protect the vulnerable patients with AUD. Additionally, participants had to be classified as risky drinkers or hazardous drinkers. Categorizing participants was dependent upon self-reported drinking levels and could serve as a limitation in enrollment (Linden-Carmichael, Lanza, Dziak & Bray, 2017). Furthermore, patients admitted to the hospital were excluded. Similar findings were reported by Mullins, Mazer-Amirshahi, & Pines (2017).

**Attrition.** While participants expressed interest in the information provided, most did not follow-up at 3-months. Multiple methods for follow-up communication were initiated. Some participants, with good intentions to follow-up, simply did not. This is a common behavior and unhealthy thought processes among patients with AUD (U.S. Department of Health and Human Services, 2016). In our study, the attrition rate was high; however, it was similar to those reported in the literature (Bruguera et al., 2018; Leontieva et al., 2009).

Participants were lost to follow-up due to a loss of contact information. A pre-paid phone or mini-pad with a link to complete the follow-up could have been beneficial. Offering a disposable phone could have allowed participants to follow-up if their phones were turned off for lack of payment. Part of the compensation for participating in the study could be linked to a free phone to keep at follow-up. Alternatively, a mini pad for communication could assist patients who were discharged quickly, could not be provided privacy, or grew tired of waiting in the ED. A link to the study could be downloaded and self-administered. At 3 months, a message with a link to the study could be sent for follow-up to complete the study.

**Group enrollment at different time periods.** For our study, the comparison group was enrolled prior to the intervention group. Many life events could have disproportionately affected
the comparison group, helping to explain why it took longer to recruit participants in the intervention group. The elapsed time may explain why participants in the intervention group at baseline had statistically significant differences for some drinking behaviors as compared to the comparison group. The nurse navigators may have inadvertently provided a brief intervention to participants who were enrolled in the comparison group that may have returned to the ED for care. Although provisions were put in place for this to not occur, this may have occurred.

**Social desirability.** Participants may be reluctant to reveal an accurate accounting of their alcohol consumption for fear of confrontation, judgment, or non-conformity with social norms. Social desirability in our study could have occurred during self-reporting of alcohol use at enrollment or at follow-up when the participants were asked how much alcohol they consumed. The participants at enrollment may have self-reported higher levels of alcohol use to qualify for the study or lower at follow-up to please the investigator who had spent time with the participant at Time 1. Latkin et al. (2017) reported those who have higher levels of social desirability at follow-up self-reported significantly lower AUDIT scores. One suggestion for decreasing social desirability is to start out asking questions that are positive, such as, what the participant enjoys about drinking and what problems they are having with its use. In addition, make the reporting of alcohol use appear to be normative.

**Self-report bias.** The outcomes were measured by self-report. We did not measure any actual drinking behaviors which could have biases. The self-report could be inaccurate because of their recalling bias or social desirability. In future studies, using a mixed method of obtaining biological assays with the patient self-report to verify the results of self-report could be considered (Latkin et al., 2017).

**Future Studies**
This next section will describe suggestions for future studies. Included are an analysis of a randomized control trial to assess the efficacy of a nurse navigator in providing a BI, a gap analysis to assess current state of providing SBIRT in the ED, and a study to measure nurse satisfaction of SBIRT training for role adequacy and role support.

**Nurse navigator.** A need exists from empirical interventional studies on how EDs or hospital systems could perform SBIRT using nurses that are not providing direct patient care. Our study provides evidence on the feasibility of the nurse navigator to administer a BI in the ED for patients with AUD. Previous research studies have supported the use of the nurse at the bedside to assist with SBIRT; however, barriers have been reported (e.g., time constraints). This pilot study may be beneficial for a future randomized control trials to assess the efficacy of a nurse navigator in providing a BI in the ED.

**Gap Analysis.** The Emergency Nurses Association (ENA, 2008) provided tools to assess and resources to administer SBIRT in the ED. The tool assists with identifying gaps, including identifying who would be responsible for screening of alcohol use, performing the BI, and referring to the community for treatment. Assessment of current state may assist with policies or standards of care, and nursing activity to support nurse initiated SBIRT.

**Nurse satisfaction.** A pre and post nursing satisfaction survey to assess role adequacy and role support is suggested. There is a paucity of nursing studies measuring improvement in feelings of role adequacy, support, and attitudes toward providing SBIRT to patients with AUD (Mitchell et al., 2017). Providing SBIRT in the ED by qualified nurses is essential in an environment where the ED is used as a primary care provider. This service would help improve access to services for those who suffer from health disparities by establishing partnerships with community agencies (Barbor, Boca, & Bray, 2017).
Implications for Policy Changes

Screening patients on admission for AUD could be a standard of practice for all nurses in the electronic medical record (EMR). In addition, a prompt for referral to a nurse navigator to provide a BI and alert to a substance use disorder nurse for referral to treatment could be implemented. A system wide interdisciplinary committee to review current gaps in practice and training for nurses on the importance of screening, BI, and referral to treatment to ensure the nursing workforce is ready for the challenge to care for patients with AUD.

Implications for Clinical Practice

Screening and Brief Intervention for alcohol use is an evidenced based best practice intervention for patients with risk for AUD. Nurses in the ED are in a unique position to screen patients for alcohol use based on current best practice tools. Nurse Navigators have the skills to plan interventions with their patients at risk for alcohol use disorder. They can assist with referrals to treatment in the community and offer options to the patient who is ready to change their alcohol use.

Conclusion

This was the first study conducted in the ED by a nurse navigator who provided a BI with the goal of decreasing alcohol use. The intervention demonstrated that it is feasible for a nurse navigator, without a patient assignment to administer the BI in a busy ED for patients with AUD. The study provides evidence for a future randomized-control trials to assess the efficacy of a nurse navigator in the ED related to AUD. In addition, a psychometric study for the HBMI-R instrument is warranted for validity and reliability. Future nurse-led interventions, including those using the NIAAA booklet and nurse-patient discussions on alcohol use, hold great promise for improving the drinking behaviors and health of people who struggle with AUD.
Appendix A: A Guide for the Nurse Navigators

Intervention Study
Guide for Nurse Navigators

FLOW:

- **Feedback**
  - Ask Permission
  - Introduce yourself and let the patient know that you will be providing them with information to complete the research study.
  - Use the screening and brief intervention tool and the Rethinking Drinking booklet to help guide the intervention
  - Share screening results
    - PI will provide you with how much the patient drinks daily/weekly
    - PI will share BAL if he has that information
    - PI will share readiness to change stage
    - First, tell the patient: I’m going to share some information with you, I’m not here to push you to change anything you don’t want to change, what you do is up to you.
    - Second, the nurse navigator will use both the Intervention tool and page 5 of the Rethinking Drinking booklet to review person’s daily/weekly norms, and drinking patterns in the U.S. adult – Most of our patient will fall into either the 9% or 19%. These statistics put you at increased or highest risk for injuries, health problems, and/or, you can use any information you may have regarding patient’s admission (i.e., fall or pancreatitis due to drinking).
    - Third, ask the patient, what do you make of this information I just shared with you? Or, what are some of your concerns? Or, what role do you think alcohol played in your being in the ED today?

- **Listen and Understand**
  - First, nurse navigator will listen to what the patient’s responses are (change talk) and on page 8 of the Rethinking Drinking booklet jot down some of their responses.
  - Second, use what the patient shares to explore their options (exploring ambivalence).
    - They may say something like, “I’m not going to make any changes, and I will drink until I die”. If this is the case then support their decision not to do anything at this time, let them know we are here, and give them the booklet.
    - They may say, “I’m tired of drinking, it’s keeping me from seeing my family”.
  - Third, it may be that you need to explore some more, use the screening and brief intervention tool and explore options with the patient. Ask the patient:
What are the good things about drinking? Pros.
What are the not-so-good things about drinking? Cons.

Fourth, Summarize with the patient:
- On the one hand you said the good thing about changing your drinking is...
- On the other hand you said the not-so-good thing about changing your drinking is...

Fifth, on a scale from 0-10, how confident are you that you can change your drinking? Or, how important is it for you to change your drinking? Or, how ready are you to change your drinking? Use whichever statement feels right at the time.
- Now you know the patient’s readiness to change.

- **Options Explored**
  - First, what do you think you will do? Or what changes are you thinking of making? Or what do you see as your options? Again, whatever question feels right to get them to share at the time.
    - You can offer a menu: cut down, quit, seek help, or reduce harm.
    - You can also use previous strengths, resources, and successes:
      - Stopped drinking in the past
      - Personal strengths
      - Support systems
  - Second, ask them by when do you feel you can make these change?
  - Third, you can once again use the scale of 0-10 to find out if they will be able to decrease their drinking from let’s say, 10 beers a day to 7, starting next week. If their response is a 3, then maybe it’s not a realistic goal and you may suggest a more achievable goal (but don’t force this).
  - Fourth, you can start wrapping up by having them concentrate on following through with what you two have agreed on.
  - Fifth, Use page 15 of the Rethinking Drinking booklet, and ask them to keep track of any excessive drinking day above their stated goal, and to keep an eye on the situation and triggers that were occurring when they were drinking.
  - Figure out how and when they will follow up if that is their plan – give them the Rethinking Drinking booklet to take with them so they may share at their follow up appointment if any or to use for their own growth.

- **W** = don’t warn them or tell them that they are headed for disaster if they don’t stop drinking. They know this already.

Note: THE DIET AND EXERCISE information was only for the control group. It’s ok to give the patient the referral information but don’t push it on them if they are not ready. We will need to document what we give them please (Rethinking Drinking booklet only or both Rethinking Drinking booklet and referrals).
Appendix B: Clinician’s Guide Screening Tool

Please answer the following questions to the best of your knowledge. To help yourself remember, think of any events that happened during the past month (30 days). Did you, a friend or a family member have a birthday, vacation, work trip, or other get together or special occasion? How about other events like pay days, medical appointments, or sports events?

1. In the past month did you sometimes drink beer, wine, or other alcoholic beverages?
   - If no – the screening will stop and I will exclude you from the study
   - If yes – I will continue with the screening and ask about your drinking days

I will now ask you questions regarding how much you drank in the past month, and your daily and weekly drinking patterns. By a drink I mean: One drink or standard drink (SD) is equivalent to 12 oz. can of beer; 5 oz. glass of wine; or 1.5 oz. of 80-proof shot of hard liquor.

2. How many times in the past month have you had
   a. four (4) or more drinks in a day (for women) _____
   b. five (5) or more drinks in a day (for men) _____

3. On average, how many days a week (in the past month) did you have an alcoholic drink? _____

4. On a typical drinking day, how many drinks did you have in the past month? _____
   - Weekly average drinking __________
Appendix C: Demographic Interview Form

In the following questions, we would like to learn more about you personally. Please answer the questions to the best of your knowledge. Your answers are completely private and confidential.

1. What is your Date of Birth? __________ / ______ / _______
   Month   Day   Year
2. What is your age in years? __________ years old
3. Do you consider yourself to be of Hispanic, Latino, or Spanish origin? That is that you are of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish background.
   a. Yes
   b. No
4. What is your race? [Mark ALL that apply]
   a. White/Caucasian
   b. Black, African American
   c. American Indian or Alaska Native
   d. Asian Indian
   e. Chinese
   f. Filipino
   g. Japanese
   h. Korean
   i. Vietnamese
   j. Other Asian
   k. Native Hawaiian
   l. Guamanian or Chamorro
   m. Samoan
   n. Other Pacific Islander
   o. Mestizo
   p. Mixed race
   q. Other race
      Specify “Other” race: ____________________________________
5. Are you currently:
   a. Married
   b. Widowed
   c. Separated
   d. Divorced
   e. Never married
6. What is the highest grade level or last year of school you completed?
   a. None
   b. First – fourth grade
   c. Fifth – Sixth grade
   d. Seventh – Eight grade
   e. Ninth grade
   f. Tenth grade
   g. Eleventh grade
   h. High school graduate
   i. Vocational certification
   j. Some college, no degree
   k. Associate’s degree, occupational
   l. Associate’s degree, academic
   m. Bachelor’s degree
   n. Master’s degree
   o. Professional degree
   p. Doctoral degree
   q. Other
   _______________________________________________________

7. What languages do you speak at home?  
   [Mark ALL that apply]
   a. English
   b. Spanish
   c. Other
   Specify “other” language: __________________________

8. About how old were you when you first started drinking, not counting small tastes of sips of alcohol? ___________ years old.

9. What is your primary occupation? (whether or not you are currently employed)
   ________________________________________________

10. What is your primary work status at this time? Are you [circle one answer]:
    a. Working a full-time paying job
    b. Working a part-time paying job
    c. Self-employed
    d. Unemployed and looking for work
    e. Unemployed and not looking for work
    f. Temporarily laid off
    g. Maternity/paternity leave
    h. Sick leave or disability
    i. Retired and not working
    j. Student
    k. Homemaker/Caregiver for your children
    l. Other
i. Specify “other” work status: _______________________

11. How much money did you (including your spouse/partner if applicable) earn or receive from a job or other legal sources in the past month, including money you may have received from General Relief, TANF (Temporary Assistance for Needy Families), SSI (Social Security Income), SSDI (Social Security Disability Income), unemployment insurance, or money from family or friends?
   a. $0 to $250
   b. $251 to $500
   a. $501 to $1000
   b. $1001 to $1500
   c. $1501 to $2000
d. $2001 to $2500
e. $2501 to $3000
   f. $3001 to $4000
g. $4001 to $5000
   h. $5001 or more
   i. Don’t Know
   j. Prefer not to Answer

12. In the past 3 months, were you covered at any time by health insurance or medical coverage, such as Medi-Cal, Medicare, the Veterans Administration, Healthy Families, or Private Insurance?
   a. Yes
   b. No

13. The following questions are about Sexual Orientation. Please circle (Do you think of yourself as)?
   a. Straight or Heterosexual
   b. Lesbian, Gay, or Homosexual
   c. Bisexual
d. Something else
e. Don’t know
   f. Choose not to disclose

14. The following questions are about Gender Identity. Please circle (What is your current gender identity)?
   a. Male
   b. Female
c. Transgender Male/Tran Man: Female-to-Male (FTM)
d. Transgender Female/Trans Women: Male-to-Female (MTF)
e. Genderqueer: neither exclusively Male nor Female
f. Additional Gender Category/(or Other), please specify: ______________________
g. Choose not to disclose

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Appendix D: Readiness to Change

Please listen to the questions and decide whether you strongly disagree, disagree, unsure, agree, or strongly agree with the statements. Choose the number that best describes your feeling about each statement. Your answers are completely private and confidential.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I don’t think I drink too much</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>I am trying to drink less than I used to</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>I enjoy my drinking, but sometimes I drink too much</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>Sometimes I think I should cut down on my drinking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>It’s a waste of time thinking about my drinking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>I have just recently changed my drinking habits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>Anyone can talk about wanting to do something about drinking, but I am actually doing something about it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8.</td>
<td>I am at the stage where I should think about drinking less alcohol</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>My drinking is a problem sometimes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10.</td>
<td>There is no need for me to think about changing my drinking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11.</td>
<td>I am actually changing my drinking habits right now</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12.</td>
<td>Drinking less would be pointless for me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix E: AUDIT-C

Please answer the following questions to the best of your knowledge that best describes your use of alcohol beverages in the past 3 months (90 days). Your answers are completely private and confidential.

To help yourself remember, think of any events that happened during the past 3 months (90 days). Did you, a friend or a family member have a birthday, anniversary, vacation, work trip, or other get together or special occasion? How about other memorable dates like pay days, medical appointments, or sports events?

One standard drink is equivalent to a 12-ounce can of beer; 5-ounce glass of wine; or 1.5-ounce of 80-proof shot of hard liquor.

1. How often did you have a drink containing alcohol in the past 3 months (90 days)?
   Circle one.
   a. Never
   b. Monthly or less
   c. 2-4 times a month
   d. 2-3 times a week
   e. 4 or more times a week

   If answer is never for question #1, skip questions #2, and #3

2. How many standard drinks containing alcohol did you have on a typical day in the past 3 months (90 days)? Circle one.
   a. 1 or 2
   b. 3 or 4
   c. 5 or 6
   d. 7 to 9
   e. 10 or more
3. How often did you have 6 or more drinks on one occasion in the past 3 months (90 days)? Circle one.
   a. Never
   b. Less than monthly
   c. Monthly
   d. Weekly
   e. Daily or almost daily
Appendix F: PHQ-2/9

Over the *past 2 weeks*, how often have you been bothered by any of the following problems? Please choose the number that best describes your feelings about each statement. Your answers are completely private and confidential.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Total score: ______

If a total score of (< 3) may stop questionnaire

If a total score of (≥ 3) continue with questions 3-9
<table>
<thead>
<tr>
<th>Item</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Trouble falling or staying asleep, or sleeping too much</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Feeling tired or having little energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Poor appetite or overeating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Thoughts that you would be better off dead, or of hurting yourself in some way</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total score:** ______

If total score > 0 to any of the previously mentioned problems. Ask the following question. How difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? Circle one.

1. Not difficult at all
2. Somewhat difficult
3. Very difficult
4. Extremely
Appendix G: Health Belief Model Instrument - Revised

Please listen to the questions and decide whether you strongly disagree, disagree, unsure, agree, or strongly agree with the statements. Choose the number that best describes your feelings about each statement. Your answers are completely private and confidential.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My desire for using alcohol and needing alcohol is under control.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>My desire for using alcohol and needing alcohol would be worse if I did nothing about it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>I believe that decreasing or quitting drinking will help prevent diseases (complications) related to my needing and using alcohol.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Needing and using alcohol can be a serious disease if you don’t control it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>My desire for needing and using alcohol is no problem to me as long as I feel all right.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>My desire for needing and using alcohol will have a negative effect on my future health.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>My desire for needing and using alcohol will cause me to be sick a lot.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>I believe I will always need to keep from drinking.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>I believe I can control my desire for needing and using alcohol.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>I believe that decreasing or quitting drinking will control my desire for needing and using alcohol.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>If I change my drinking habits it will probably help me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>If I don’t drink I feel better.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>I would have to change too many habits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Unsure</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>----------</td>
<td>--------</td>
<td>-------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>14. It has been difficult to decrease or quit drinking.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>15. I cannot understand what the doctor told me about my desire for needing and using alcohol.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>16. When I don’t drink it interferes with my normal daily activities, it can cause me anxiety, and/or sleepless nights.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
References


Hingson, R., & White, A. (2014). New research findings since the 2007 surgeon general’s call to action to prevent and reduce underage drinking; A review. *Journal of Studies on Alcohol and Drugs, 75*(1), 158-169. https://doi.org/10.15288/jsad.2014.75.158

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https://doi.org/10.1016/j.ienj.2016.12.003


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disorder-epidemiology-pathogenesis-clinical-manifestations-course-assessment-and-diagnosis?search=risk%20thresholds%20for%20alcohol%20consumption&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2


