Screening, brief intervention, and referral to treatment for alcohol use in a community college

Alexandra Aimee Bell

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SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT FOR ALCOHOL USE IN A COMMUNITY COLLEGE

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
in
Nursing

by
Alexandra Aimee Bell
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ABSTRACT

This study examines the impact of Screening, Brief Intervention, and Referral to Treatment (SBIRT) on the high-risk alcohol behavior of a sample of California community college students accessing services at the student health center. The study used a quasi-experimental nonequivalent comparison group before-after design. The experimental group consisted of students seeking care in the student health center, and once screened, each at risk individual was given a brief intervention and referral to treatment. The comparison group consisted of a sample of students attending the National Collegiate Alcohol Awareness event; individuals screened at high-risk were given their score and written information. Both groups were contacted by telephone one month later and re-screened. Post-test descriptive qualitative data were gathered from the experimental group regarding their perceptions of the SBIRT process. The independent sample student t-test compared the differences between the experimental and comparison group mean pre-test, as well as the post-intervention scores. There was no statistically significant difference in the pre-test scores. The experimental group’s mean risk for alcohol abuse was significantly lower than the comparison group’s mean score on the post-test. The results support the hypothesis that California community college students who score at-risk and receive a brief intervention through health services will have significantly lower alcohol use at follow-up compared to students who only received written material.
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CHAPTER ONE
INTRODUCTION

Background and Significance

Alcohol use among college students is a continuing public health problem. Binge drinking and alcohol misuse results in deaths, injuries, crimes, and sexual assaults. The secondhand effects impact not only college campuses but also surrounding neighborhoods as well. In 2001, 44% of college students reported binge drinking, which was the same in the 1990’s (Weschler & Nelson, 2008). A 2007 National Institutes of Health study showed that 36% of female and 49% of male college students reported binge drinking in the previous two weeks (Amaro, et al., 2010). These figures clearly indicate that current policies and interventions are not impacting college student alcohol use.

Problem Statement

A program of Screening, Brief Intervention, and Referral to Treatment (SBIRT) was developed and used in emergency rooms (ER), trauma centers and primary care centers for patients admitted for potential alcohol related health/medical problems. Patients who received SBIRT were less likely to be arrested for driving under the influence (DUI) of an illegal substance or alcohol in the three-year period after discharge (Schermer, Moyers, Miller, & Bloomfield, 2006). A systematic review of randomized controlled trials by the US Preventive Service Task Force found that after a 15-minute conversation with a primary care
provider, patients decreased their alcohol use by 13%-34% compared to a control group (Whitlock, Polen, Green, Orleans, & Klein, 2004). A screening and brief intervention program was also used in a four-year university with undergraduate students and those participants decreased their alcohol use at the six month follow up (Amaro, et al., 2010). Implementing this screening program in a California community college student health center could impact rates of alcohol use and decrease the adverse consequences of alcohol misuse.

Purpose

The purpose of this study is to evaluate the impact of using Screening, Brief Intervention, and Referral to Treatment (SBIRT) on the alcohol misuse behavior of a sample of California community college students accessing services at the student health center. These results were compared to students who attended the National Collegiate Alcohol Awareness event and only received written material and no brief intervention. Alcohol use of participants in both groups was assessed through the self-administered Alcohol Use Disorders Identification Test (AUDIT) screening (see Appendix A). The students who received both a screening and a brief intervention were asked about their perceptions of the screening and the intervention process.
Hypothesis

California community college students who have a positive screening for alcohol misuse and receive a brief intervention and referral to treatment (SBIRT) will have a significantly greater reduction in their alcohol use at their one-month follow-up compared to students who only receive written material.

Research Question

What are California community college student's perceptions of the alcohol screening and brief intervention process?

Summary

Alcohol use among college students remains a problem despite varying intervention programs. Regardless of current policy, campus interventions, community appeals, and legislation alcohol use rates remain the same. SBIRT has been implemented in ER’s, trauma centers, primary care centers, and four-year colleges and universities with success. No studies of the use of the SBIRT program with community college students have been published. The proposed study of the SBIRT program in a California community college setting will add to the body of literature regarding the effectiveness of SBIRT on student alcohol related behavior.
CHAPTER TWO
LITERATURE REVIEW

Alcohol Use among College Students

Alcohol use among college students continues to be a problem on college campuses today. Healthy Campus 2010 common goals focus on decreasing college student alcohol use and Healthy People 2020 includes ten goals that address alcohol use in adolescents and young adults and (Healthy Campus 2010; Healthy People 2020). In 2010 Burwell, Dewald and Grizzell published their midcourse review of the Health Campus 2010 goals and targets using the American College Health Association’s National College Health Assessment (ACHA-NCHA) data. Of the 160 objectives, 6% met or exceeded the set targets, 37% moved toward the targets, 10% had no change, 43% moved away from the targets and 5% did not have any data available. In general, Burwell and associates concluded there was no change from the baseline among college student high-risk alcohol consumption.

In 1992 the Harvard School of Public Health College Alcohol Study (CAS) began and continued for 14 years. The CAS was designed to present a description of college alcohol use and describe behaviors of college students in regards to their alcohol use. According to Wechsler and Nelson’s 2008 review of the CAS data, the rate of alcohol use, specifically binge drinking, had remained the same over the 14 years, at approximately 40%, regardless of sampling or
methodology. Among 18 – 24 year old college students, the rate of consuming five or more drinks on one occasion in the previous 30 days increased from 41.7% to 45.2% (Hingson, Zha, & Weitzman, 2009; Hingson, 2010).

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) Task Force on College Drinking Report (2002) recommended strategies in descending tiers based on research and evidence supporting these strategies. The top two tiers include the best strategies that have good research evidence among college student populations and other similar populations. Tier one strategies involve targeting individual students and using cognitive-behavioral skills and brief interventions that focus on motivating change in behavior and beliefs. Tier two strategies focus on policy and community strategies such as enforcement of minimum drinking age laws and limiting alcohol retail outlet density.

Nelson, Toomey, Lenk, Erickson and Winters (2010) examined the knowledge and use of the tier one and tier two alcohol use prevention strategies recommended by the NIAAA on college campuses. The authors found that most colleges continue to focus on inferior tier four educational approaches to combat alcohol use even though these methods when used alone have proven to be least effective. Hustad, et al. (2011) studied the effect of an alcohol citation on alcohol use; they found little change in average alcohol consumption after students received a citation with a fine of $50 and a requirement to complete an alcohol intervention.
Blowers (2009) examined alcohol use among students attending community colleges and four-year institutions. Blowers concluded that community college students and four-year students had insignificant differences in their alcohol use. Fewer community college students (67%) than four-year institution students (73%) reported having one or more alcoholic drinks in a week. Also 46% of community college students and 56% of four-year school students reported consuming five or more drinks on occasion in the previous two weeks. More community college students reported driving under the influence of alcohol (28.7%) compared to four-year institution students (18.6%).

According to the 2010 ACHA National College Health Assessment (ACHA-NCHA), 65.2% of the entire sample of college students (reference group) reported have one or more alcoholic drinks in the past 30 days, compared to 48.8% of the California Community College student sample surveyed by the Health Services Association California Community Colleges (HSACCC Consortium group), and 45.4% of the Allan Hancock College student sample. The same reports also showed that 26.9% of the nationwide reference group of students reported driving after having any alcohol in the previous 30 days. This compares to 30% of the California community college student sample, and 27.1% of the Allan Hancock College student sample.

Schaus, et al. (2009) conducted a study evaluating the effectiveness of using a simple screening with one-question: "in the last two weeks have you had five (for men) or four (for women) drinks on one occasion?". This is referred to as
a 5/4 screening. Students who screened positive were then screened further and received a brief intervention. The authors' found this 5/4 screening lacked specificity but was able to identify some high-risk students. The study showed that the average age of the first drink for this sample was 15.8 years of age and they continued to drink at a high-risk level when entering college. Thus the authors recommended targeting interventions to freshman students.

The literature frequently refers to the impact of high-risk alcohol use as negative consequences or "harms" and interventions to prevent these impacts as "harms reduction". DeMartini and Carey (2009) examined a sample of college student whose AUDIT scores identified them at high-risk with a score above eight out of 40. Those who scored high-risk reported their first drink at 15.86 and higher alcohol related consequences in college, i.e. more sleep deprivation and lower overall health.

Carrell, Hoekstra, and West (2011) studied the impact alcohol consumption has on academic performance in the college setting. The students who turn 21 just prior to taking the final exams scored 1/10th of a standard deviation lower than students who turn 21 just after the finals. Schaus, et al. (2009) found that the average age of the first drink was 15.8 years old and experiencing alcohol related negative consequences prior to college did not have a moderating effect on alcohol behavior. Mallett, Marzell, and Turrisi (2011) also found that to be true; among their sample; 36% had consumed alcohol pre-college and 60% reported consuming alcohol at 10-month follow up. In addition,
37% had experienced an alcohol related negative consequence pre-college and at follow-up 55% had reported experiencing an alcohol related negative consequence.

According to Wechsler & Nelson (2008), among the CAS sample, approximately half of all current college binge drinkers began this behavior prior to attending college. The authors contributed many factors to binge drinking behaviors such as membership in a fraternity/sorority; high perception of peer binge drinking; easy access to alcohol; low-cost alcohol; and attending a college with a high rate of binge drinking. Students who lived at home with parents had the lowest rate of binge drinking.

Wechsler and Nelson (2008) discussed the many secondhand effects of alcohol use such as disruption of sleep or studying, property damage, verbal, physical or sexual assault. According to a 2007 report by NIAAA, approximately 696,000 college students each year are assaulted by another student who has been drinking and more than 97,000 students are victims of sexual assault. This same report also estimates that 1,700 students will die each year from alcohol related injuries. Hingson (2010) reported 1,825 deaths from all alcohol related unintentional injuries including traffic accidents in 2005; as many as 46% of the total killed in traffic accidents involving alcohol were people other than the drinking driver.

Students themselves view alcohol use during college as a part of the college culture and acceptable (Colby, Colby & Raymond, 2009; Howard, Griffin,
Boekeloo, Lake, & Bellows (2007). According to the Colby team findings, students generally associated less risk to binge drinking for people their age than older adults; they also saw several benefits to alcohol use, such as, facilitating socialization and decreasing inhibitions. Although the students did regard alcohol use as a part of the college experience, they did not imagine themselves continuing with this level of alcohol use after graduation. Tremblay, et al. (2010) found that college students tended to drink heavier at the beginning of the semester and were able to decrease consumption around exam times.

Hingson (2010) showed that college students perceive that their peers consume larger quantities of alcohol than is actually being consumed and that perception may contribute to binge drinking. The College Life Alcohol Salience Scale (CLASS) screening tool is designed to measure students’ beliefs surrounding alcohol and campus culture. This tool showed a connection between student perceptions, beliefs and alcohol consumption (Osberg, Insana, Eggert, & Billingsley, 2011).

The Alcohol Use Disorders Identification Test (AUDIT)

According to Babor, Higgins-Biddle, Saunders, and Monteiro (2001) the AUDIT screening tool was developed by the World Health Organization (WHO) over a two decade time period and has been used in multiple settings, including universities. The 10 AUDIT questions identify hazardous alcohol use, harmful alcohol use and possible alcohol dependence. Barbor, et al. reported good
sensitivity and specificity with a score higher than eight for most populations indicating high risk. However, Babor, et al., noted that improvements have been seen when lowering or increasing the cut off score depending on the specific population. Walters and Baer (2006) recommended decreasing the score to six to detect high-risk drinking with college students. Seigers and Carey (2010) reviewed studies that examined the efficacy of screening and brief intervention (SBI) for alcohol use in college settings. Five of the 12 studies used the AUDIT tool; two of those studies had six as the cut off; two other studies used eight as the cut off, and one study used eight as the cut off for males and seven as the cut off for females.

Validity and Reliability

Reliability pertains to the consistency of the data and the probability that the same results would be obtained if the study were repeated using a new sample (Polit & Beck, 2008, p.196). Similar findings using the AUDIT scale have been found with samples from trauma centers, emergency rooms, primary care clinics and four-year Universities (Amaro, et al., 2010; Bernstein, et al., 2007; Ehrlich, Haque, Swisher-McClure, Helmkamp, 2006; Fleming, et al., 2010; Martens, et al., 2007; & Schermer, et al., 2006).

Validity describes the "soundness" of the data and whether or not the study is actually measuring the data that the study professes to be measuring (Polit & Beck, 2008, p.196). The study will be using the AUDIT screening tool, which has been validated in many studies over many years. The WHO requested
an international group of investigators to develop a screening tool that would identify early alcohol misuse from hazardous alcohol use not just in developed countries but developing countries also. Approximately 2000 participants from six different countries were recruited. Some were current drinkers and some diagnosed with alcohol dependence. These participants were given physical exams and extensive interviews and screenings and from this pool of data select items were chosen for the AUDIT and multiple studies were conducted to validate the screening tool (Babor, et al., 2001).

Protective Strategies

Howard, et al. (2007) examined students’ attempts at minimizing harmful consequences of their own alcohol use and the alcohol use of their friends. Students use many protective strategies such as eating before drinking, limiting the number of drinks, and only drinking on weekends. Females use more self-protective strategies and caretaking skills than males (Benton, Downey, Glider & Benton, 2008; Howard, et al., 2007). To minimize risk, females report utilizing coed groups with whom they socialized and with whom they would stay or would accompany them home. The Howard team study found that students in the study identified the need for more information regarding different types of alcohol and how alcohol affects people over time, signs and symptoms of alcohol poisoning, refusal skills to combat peer pressure, information regarding alcohol laws and accessing resources.
Screening, Brief Intervention, Referral to Treatment

The Screening, Brief Intervention and Referral to Treatment (SBIRT) program has been implemented in many settings including emergency rooms (ER), trauma centers, and primary care settings. The SBIRT program involves three phases; screening, brief intervention and referral to treatment. The screening phase involves the use of a validated alcohol screening. There are many valid alcohol screening tools available, several studies referenced here have used the AUDIT, or Alcohol Use Disorders Identification Test (Ehrlich, et al., 2006; Martens, et al., 2007; Seigers & Carey, 2010).

The brief intervention phase used in these studies was based on motivational interviewing strategies and the stages of change developed by Prochaska and DiClemente (1982) (Amaro, et al. 2010; Ehrlich et al. 2006; Martens, et al., 2007). Whitlock, et al. (2004) conducted a systematic review of randomized controlled trials done by the US Preventive Service Task Force. Among the participants 13-34% reported decreasing the number of drinks per week and 10-19% reported drinking at a moderate to safe level. Schermer, et al. (2006) found that patients in a trauma center who were screened had fewer driving under the influence (DUI) arrests following a three year period compared to a control group.

Ehrlich, et al. (2006) looked at the efficacy of SBIRT in a student health center (SHC) in a university setting. The authors found the SBIRT program was feasible and well received by staff; students who were screened and received an
intervention decreased their AUDIT scores on follow up. Martens, et al. (2007) had similar results and found that students who decreased their AUDIT scores also increased their use of self-protective strategies. Amaro, et al. (2010) also had decreased AUDIT scores on follow-up and saw an increase in the stages of change toward readiness to change behavior.

Bingham, et al. (2010) discussed the success of the SBIRT program and created a web-based program that could reach greater numbers of students than in-person interventions. Although this study showed evidence of efficacy the investigators recommend more research is needed. Schaus, Sole, McCoy, Mullett, and O'Brien (2009) studied the effectiveness of a brief motivational intervention (BMI) given by a primary care provider in a randomized control trial in a student health center. The experimental group received two 20-minute BMI sessions two weeks apart and the control group only received literature and no BMI. Compared to the control group, the experimental group had a greater reduction in alcohol consumption and harms, which continued through follow-up at six and nine months. There are many studies that show that college and university health centers are an ideal place to implement screening programs for alcohol use (Flemming, et al., 2010; Hingson, 2010; Madras, et al., 2008; Schaus, et al., 2009).
Transtheoretical Model: Motivational Interviewing

Prochaska and DiClemente (1982) developed the Transtheoretical model (TTM) of behavior change. This model integrates principles of multiple theories and therefore it is called Transtheoretical. Prochaska and Velicer (1997) describe the primary assumption that people make behavioral changes in a series of stages and the stages of change are used to determine an individual's readiness to change. The stages of change are precontemplation, contemplation, preparation, action, and maintenance. A key component of change is the “decisional balance” in which the individual weighs the pros and cons of changing (Prochaska, 2008; Prochaska & DiClement, 1982; Prochaska, & Velicer, 1997).

Lange and Tigges (2005) described the transtheoretical model (TTM) as supporting motivational interviewing (MI) and described change is a continuum and that people rarely achieve change on the first attempt but viewed change as a progression. MI is a counseling technique that allows individuals to explore and resolve ambivalence about changing behavior. Some techniques included in MI are reflective listening, empathy, open-ended questions, clarifying and summarizing statements. Lange and Tigges state that MI can easily be incorporated into the nursing philosophy and process and can support nursing interventions to promote change and health behavior adaptation. Horneffer-Ginter (2008) compared the stages of change in the TTM to the concept of “possible selves”. TTM identifies the best health promotional techniques for the individual by assessing their individual stage of change. The “possible selves"
model explores the individual's thoughts about his or her future self. Horneffer-Binter (2008) found the TTM and "possible selves" model would be effective tools for health promotion in college health. Hampton, Brinberg, Peter, and Corus (2009) examined use of TTM in creating health messaging and found that targeted messages addressing individuals in the precontemplative stage should be focused on increasing "arousal" to move individuals to the contemplative stage. These individuals were more motivated with a cognitive message.

Nyamathi, et al. (2010) looked at the effectiveness of MI over a nurse led intervention. Their population included Methadone-maintained clients who were at risk for HIV and Hepatitis B virus who engaged in high-risk alcohol consumption. The results of the nurse led intervention, the MI intervention delivered by a trained therapist, either one-on-one or in a group, had equivalent effects with decreases in client alcohol use at the six-month follow-up.

Rash (2008) explored clinician perspectives and attitudes regarding utilization of MI for alcohol use among college students. The author discusses how MI is a strategy used to assist the clinician in guiding the student through the stages of change. The clinicians were interviewed after receiving eight hours of MI training in preparation for an alcohol study. All clinicians agreed that this method of encouraging student concerns, compared to provider-driven and advise-giving visits, was difficult and required practice. The clinicians also expressed concern with the time constraints of this method and reported feeling frustrated when students were in precontemplation stage and failed to recognize
the danger of their behavior. All clinicians agreed that MI encouraged more student participation and generated greater behavioral change than standard care. Littlejohn and Holloway (2008) examined nursing interventions for patients with alcohol problems and describes providing a brief intervention and utilizing MI techniques such as empathy, acceptance, genuineness to promote a therapeutic interaction.

Summary

Alcohol use among college students remains a problem that impacts student academics, health and safety. The SBIRT program has been implemented in several settings such as ERs, trauma centers and primary care settings including university and college student health centers. No research has been done to evaluate the effectiveness of implementing SBIRT in a California community college student health center. This study evaluated the effect of SBIRT on the alcohol use among students accessing care in a California community college health center in comparison to students screened at an Alcohol Awareness event but did not receive a brief intervention.

Operational Definitions

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT screening tool was developed by the World Health Organization (WHO) and has been tested and used for over 20 years. It is a ten-
question screening instrument that asks about alcohol consumption, symptoms of dependence and other alcohol related problems. It can be administered in two or three minutes either in an interview or self-administration (SAMHSA, 2007).

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

SBIRT is a program to evaluate alcohol use by using a screening tool to measure the risk of developing dependency or other harmful effects of alcohol use. Those who screen positive for at-risk alcohol use are then provided an intervention, which may include a referral to a specialist (Amaro, et al., 2010; Bernstein, et al., 2007; Ehrlich, et al., 2006; Madras, et al., Martens, et al., 2007; Schermer, et al., 2006).

**Motivational Interviewing**

Motivational interviewing is a patient based counseling style that encourages patients to look at their health behavior and consider a change (Nyamathi, et al., 2010). It utilizes specific skills that include reflective listening, open-ended questions, encouragement of positive actions and avoiding an authoritarian position (Rash, 2008).
CHAPTER THREE
METHODOLOGY

Design

The study had a quasi-experimental nonequivalent comparison group before-after design, addressing alcohol misuse among community college students. The target population was California community college students identified at high-risk for alcohol misuse through the AUDIT alcohol screening tool. The experimental group of students who identified at high-risk for alcohol misuse participated in the SBIRT program which consisted of screening, brief intervention, and referral to treatment. The comparison group of students completed the AUDIT screening tool and those who were screened at high-risk for alcohol misuse received written information. All participants completed the AUDIT in a follow-up telephone call one month later. Post-test descriptive qualitative data were gathered from experimental group participants regarding their perceptions of the screening process and the brief intervention. Student responses were analyzed for themes and patterns.

Population and Sampling Plan

The accessible population included students at a central California community college (see Appendix B). A convenience sample of students was recruited for the experimental group as they accessed care in the student health
center. The convenience sample comparison group was recruited from students who attended the Health Services booth during a campus-wide National Collegiate Alcohol Awareness Week event. A superior comparison group would have come from students accessing care in the health center, however, it would have been unethical to withhold care to high-risk students and deny them a brief intervention. Using a health fair for a comparison group was more appropriate because it is acceptable to give written information in this venue and it still allowed a sampling for the same target population of community college students. The use of a convenience sample may have introduced a sampling bias because convenience samples may not be representative of the general college population (Polit, & Beck, 2008, p. 341).

All participants were currently enrolled at the college and were over the age of 18 and had a positive screening on the AUDIT screening tool (a score of 6 or more out of 40 possible points). Students who presented to student health services with life threatening conditions, mental incompetence, or communication deficits were excluded from the recruitment process.

Instrumentation

The Alcohol Use Disorders Identification Test (AUDIT) was developed over 20-years ago by the WHO and has been used in numerous research studies. It is a ten-item questionnaire that inquires about recent alcohol use, alcohol dependence symptoms, and alcohol-related problems. It was designed
for the primary care setting to be used by health care workers. It identifies both harmful and hazardous alcohol use and possible alcohol dependence and focuses on recent alcohol use. Multiple studies have validated this screening tool and showed that the AUDIT has both sensitivity and specificity and recommended a cut-off score of eight for high-risk alcohol use (Babor, et al., 2001). Walters and Baer (2006) recommend using a score of six or more as an indicator of high-risk alcohol use among the college student population.

The primary investigator collected data using the AUDIT screening tool as a self-report questionnaire and compared pre-test and post-test measures. Student perceptions were collected through semi-structured interviews at follow-up.

Research Methods

Data collection for the experimental group occurred between September 1, 2010 and June 1, 2011. Students who presented to student health services for nursing care routinely completed the AUDIT tool to assess alcohol misuse. The students who had a positive screening score for alcohol on the AUDIT with a score of six or more were asked to participate in the research project. Students who agreed to participate and signed a written consent form were included in the sample (see Appendix C).

The investigator used motivational interviewing strategies with individual students in the experimental group: 1) giving feedback and assessing general
alcohol use and discussing general population alcohol use; 2) offering information regarding adverse effects of excessive alcohol use; 3) recommending reduction in alcohol use along with referring any student to counseling if required. Follow-up occurred one month after the initial assessment. The principal investigator contacted students by phone to reassess the participants by administering the AUDIT screening tool a second time and noting any change in the score and asking a series of follow-up questions.

Although the study was completed, students who continued to be high-risk on the AUDIT screening tool were given more counseling and referral if needed. This process is a continuation of nursing care and illustrates the TTM and the stages of change.

The comparison group was assessed during National Collegiate Alcohol Awareness Week. The principal investigator manned an event booth to provide students an opportunity to self-administer the AUDIT screening tool. The primary investigator explained the screening procedure and research methods prior to the students self-assessing with the AUDIT screening tool and obtained written consent from students to participate. All students were given their score, handouts describing the scoring system, high-risk drinking behavior reduction strategies and referral information (see Appendix D).

The follow-up procedure for the comparison group also was completed by telephone one month after initial assessment. Those students who scored 6 or
more on the AUDIT screening tool were contacted by phone and re-assessed with the AUDIT screening tool.

Research Question Considered

Through a semi-structured interview, data regarding student perceptions of the screening process and the brief intervention were gathered for qualitative analysis. The students were asked five questions assessing their experience, emotional impact of the screening, what behavioral changes occurred, and if they shared the information with others.

Data Analysis

Description of the Sample

The general characteristic data were collected on the experimental group only. These data are primarily nominal measurements and include gender, race, type of student (first year or second), tobacco use, reason for visit (alcohol related or non-alcohol related), family history of alcohol or drug use, and previous treatment for alcohol or drug use. Frequencies and percentages were used to describe these characteristics. The age characteristic and the scores on the AUDIT measure are ratio measures and were reported as a means, medians and ranges. Ratio variables have a true zero value (Dawson, 2008, p. 43).

To determine the equivalence of the groups' pre-intervention AUDIT scores at baseline, an independent student t-tests was used to compare the mean values of the ratio data (Polit & Beck, 2008, p.593). One assumption of the t-test
is that the variances of the groups are equal; therefore, the Levene's test for equality of variance determined if the variances of the two groups were significantly different (Polit & Beck, 2008, p. 607). If this was not the case, the t-test for nonequivalent variance was used. For all statistical tests, the probability level was established at 0.05. The p value indicates the probability that the findings are due to a random occurrence (Dawson, 2008). A p value of < 0.05 was used due to the small sample size.

**Hypothesis Addressed**

Once the experimental and comparison groups were determined to be equivalent, the post-intervention AUDIT scores were compared using the independent sample student t-test. If a p value of < 0.05 was reached, the null hypothesis, that there is no difference in the post-intervention AUDIT scores, was rejected.

**Research Question**

The qualitative data collected from the participants in the experimental group were collected by telephone through follow-up semi-structured interviews. The responses were analyzed for patterns and themes to describe the California community college students' meaning of the experience of screening and brief intervention. A template analysis was developed to apply to the narrative data (Polit & Beck, 2008). This template evolved as data were collected. The following themes included; use of time, awareness, emotional association, and usefulness of process. The data analysis was not statistical but interpretive.
Assumptions and Limitations

Selection bias exists because participants were not chosen at random and it cannot be assumed that participants in the two groups were similar prior to the intervention (Polit & Beck, 2008, p.276). However group equivalence was estimated through group comparison on the pretest AUDIT scores. This study used a convenience sample and therefore there may be sampling bias. A convenience sample may not be representative of the target population. Students accessing care at student health services may possess qualities different than students who do not access campus health care. The same logic applies to students who participate in wellness events on campus. The sample was drawn from only one California community college and this population may not be representative of community college students who attend other community colleges. The assumptions made in this study are that students will be receptive to alcohol use assessment and will give truthful responses and that students accessing student health services are similar to the general college population.

Summary

This quasi-experimental study examined alcohol misuse in one California community college setting. Using the AUDIT screening tool, alcohol risk scores were obtained from students who present to student health services for nursing care. Students with a positive screening score were asked to participate in this project and after receiving written consent the students received a brief
intervention. A comparison group of students, who participate in the National Collegiate Alcohol Awareness Week event, participated in the project and self-assessed with the AUDIT and receive their score, literature and referral information. After one month all participating students were contacted and reassessed with the AUDIT screening tool and their scores were compared. On follow-up, students in the experimental group participated in a semi-structured telephone interview to gather information regarding their perceptions of the screening process. This study will add to the existing literature regarding alcohol use among college students and evaluate the efficacy of implementing the SBIRT program in California community college student health centers.
CHAPTER FOUR
RESULTS AND DISCUSSION

Presentation of the Findings

Sample Selection and Follow-up

A total of 244 community college students completed the AUDIT tool screening for at-risk alcohol use. One hundred twenty-seven (127) in health services were recruited for the experimental group and 117 at the Alcohol Awareness Week event were recruited for the comparison group. The study targeted only those students at high-risk with AUDIT scores of six or greater out of 40; 29 in the experimental group and 44 in the control group met this criterion. In the experimental group, seven students had high-risk scores but refused to participate in the study. Eleven students were lost to follow-up, six from the experimental group and five from the comparison group. Table 1 presents the sample selection which includes the number at high-risk for alcohol misuse and the number who completed the study.

Sample Characteristics

Due to the nature of the clinic setting where the experimental groups was recruited, demographic characteristics were easily captured. No characteristic data were collected from the control group due to the health fair setting.

The experimental group, although small, was representative of the local and California community college population. The majority of the experimental group
Table 1. Sample Selection, Study Completion and Lost to Follow-up

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Comparison</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Screened</td>
<td>127</td>
<td>117</td>
<td>244</td>
</tr>
<tr>
<td>Total high-risk</td>
<td>22.8% (n=29)</td>
<td>37.6% (n=44)</td>
<td>29.9% (N=73)</td>
</tr>
<tr>
<td>Refused to Participate</td>
<td>24.0% (n=7)</td>
<td>10.0% (N=7)</td>
<td></td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>20.7% (n=6)</td>
<td>11.4% (n=5)</td>
<td>15.1% (n=11)</td>
</tr>
<tr>
<td>Completed the Study</td>
<td>55.2% (n=16)</td>
<td>88.6% (n=39)</td>
<td>75.3% (n=55)</td>
</tr>
</tbody>
</table>

was female (54.5%) and according to the annual report for Hancock College (2010), the enrollment for 2009-2010 was 53.3% female. The experimental group had a large representation of Hispanics (41.0%). This College is a Hispanic serving institution with a 38.3% Hispanic population. The mean age of the experimental group was 20.9, with a range of 18-28; 36.4% (n=22) were under the age of 21. This College student population is 60.5% under that age of 24 years of age. Of students attending Californian Community Colleges statewide: 64% are 18-24 years old, 55% are female, 43% are Asian and Pacific Islander, 17% are African American, 12% are Hispanic, and 10% are white (ARCC Report, 2010). Second year students represented 72.7% (n=22) of the sample. See Table 2 for the experimental group characteristics.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Experimental Group N=22</th>
<th>Completed Study N=16</th>
<th>Lost To Follow-up N=6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>50% (n=11)</td>
<td>62.5% (n=10)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>37.5% (n=5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Year Two</td>
<td>72.7% (n=16)</td>
<td>68.8% (n=11)</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>54.5% (n=12)</td>
<td>37.5% (n=6)</td>
<td></td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>40.9% (n=9)</td>
<td>56.3% (n=9)</td>
<td></td>
</tr>
<tr>
<td>African-American</td>
<td>4.5% (n=1)</td>
<td>6.2% (n=1)</td>
<td></td>
</tr>
<tr>
<td>Family history of alcohol abuse</td>
<td>59.0% (n=13)</td>
<td>56.3% (n=9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In reviewing the experimental group characteristics, only one student (4.5% of 22) reported use of tobacco in any form and only one student (4.5% of 22) reported an alcohol related reason for accessing care at health services. Over half (59% of 22) of the students reported a history of familial alcohol abuse. The prevalence of high-risk scores six or greater in the experimental group was 22.8%, 29 of 127, compared to 37.6%, 44 of 117, in the comparison group.
**Group Equivalence**

Of the possible AUDIT score of 40, a score of six or greater is a conservative estimate of high-risk for alcohol abuse. In this study, any student with an AUDIT score of six or more was considered at high-risk for alcohol abuse. The independent sample student t-test was used to determine the difference between the experimental and comparison group mean pre-intervention AUDIT scores (Polit & Beck, 2008, p.607). The mean AUDIT score of the experimental group was 10.25 (sd=3.45) compared to 11.18 (sd=5.8) for the control group. This difference was not statistically significant (t=0.60, p=0.55). See Table 3 for details.

Table 3. Pre- and Post-intervention AUDIT Score Comparisons

<table>
<thead>
<tr>
<th></th>
<th>Group</th>
<th>N</th>
<th>AUDIT Score Mean</th>
<th>Standard Deviation</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>Experimental</td>
<td>16</td>
<td>10.25</td>
<td>3.45</td>
<td>.60</td>
</tr>
<tr>
<td></td>
<td>Comparison</td>
<td>39</td>
<td>11.18</td>
<td>5.80</td>
<td>p=55</td>
</tr>
<tr>
<td>Post-test</td>
<td>Experimental</td>
<td>16</td>
<td>6.75</td>
<td>3.19</td>
<td>2.39a</td>
</tr>
<tr>
<td></td>
<td>Comparison</td>
<td>39</td>
<td>9.59</td>
<td>5.49</td>
<td>p=.02</td>
</tr>
</tbody>
</table>

* The t-test for unequal variances was used to analyze the difference in the post-test AUDIT score.
Research Hypothesis Considered

Hypothesis. California community college students who have a positive screening for alcohol misuse and receive a brief intervention and referral to treatment will have a significant greater reduction in their alcohol use at follow-up compared to students who only receive written material.

The brief intervention for the experimental group averaged 15.8 minutes with a range of 5-20 minutes. Table 3 provides the comparison of the mean AUDIT scores of the experimental and the comparison groups after the intervention. The student t-test revealed the experimental group mean level of risk for alcohol abuse (6.75, sd=3.19) was significantly lower than the comparison group's mean AUDIT score (9.59, sd=5.49) following the intervention (t=2.39, p=.21). Over 90% of the experimental group participants (93.8% n=15) lowered their score after a brief intervention, compared to 66.7% (n=26) of the comparison group whose members only received an alcohol use pamphlet. Thus the research hypothesis was supported.

Other Quantitative Findings

The gender difference in the alcohol risk AUDIT scores also was examined. Neither the difference in the pre-test (t=0.43, p=0.67) or the post-test (t=0.39, p=0.67) was significant. The women had better improvement in their alcohol risk behavior scores (10.5 to 6.5) than the men (9.83 to 6.50) over the study period. The pre-test and post-test AUDIT scores of first and second year students also were compared using student t-tests with similar results. Neither
the pre-test differences \( t=1.50, p=0.16 \) nor the post-test differences \( t=0.45, p=0.66 \) were significant. Although the second year students had a higher mean alcohol risk pre-intervention AUDIT score \( (11.09, \text{sd}=3.6) \) than the first year students \( (8.40, \text{sd}=2.5) \) the second year students showed greater improvement in their alcohol risk \(-37\% \text{ to } 7.0)\) than the first year students \(-27\% \text{ to } 6.2)\).

**Research Question Considered**

*Research Question.* What are California community college students’ perceptions of the alcohol screening and brief intervention process?

At the follow-up telephone contact when the experimental group participants completed their final alcohol risk assessment AUDIT tool, the students answered five follow-up questions to evaluate the process. Their responses are included in Appendix E. The investigator collated their responses to the open ended and the yes/no questions and developed themes from their narrative. Table 4 highlights these qualitative responses and identified categories.
Table 4. Experimental Participant Perceptions of Screening and Intervention

<table>
<thead>
<tr>
<th>What did you think of the screening? Was the time useful?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inductive categories</strong></td>
</tr>
<tr>
<td>Received new information</td>
</tr>
<tr>
<td>Useful information</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How did it change your behavior?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inductive categories</strong></td>
</tr>
<tr>
<td>Awareness</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Confirmed already held beliefs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Limited Alcohol</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
How did this screening make you feel?

<table>
<thead>
<tr>
<th>Inductive categories</th>
<th>Participant responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive self awareness</td>
<td>It increased the importance of health consciousness.</td>
</tr>
<tr>
<td></td>
<td>I felt informed.</td>
</tr>
<tr>
<td></td>
<td>It made me feel more self-aware.</td>
</tr>
<tr>
<td></td>
<td>It made me feel good about myself, you don’t need alcohol to have a good time.</td>
</tr>
<tr>
<td></td>
<td>It made me feel like I am doing the right thing now.</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Freaked out.</td>
</tr>
<tr>
<td></td>
<td>Confused, unaware of my drinking being at risk.</td>
</tr>
<tr>
<td></td>
<td>Shocked.</td>
</tr>
<tr>
<td></td>
<td>It made me feel uncomfortable, I felt stupid and shameful.</td>
</tr>
<tr>
<td></td>
<td>I felt put on the spot, but not judged.</td>
</tr>
<tr>
<td>Did you share the information with anyone else?</td>
<td>Participant responses</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td><strong>Yes (N=8)</strong></td>
<td>I shared the pamphlet with my brother-in-law because I am worried about his drinking. It made him think about it.</td>
</tr>
<tr>
<td></td>
<td>Yes, my husband.</td>
</tr>
<tr>
<td></td>
<td>I share the pamphlet with my friends, they wondered why boys got to drink more than girls.</td>
</tr>
<tr>
<td></td>
<td>Yes, my friend who has a problem and she is now going to rehab.</td>
</tr>
<tr>
<td></td>
<td>I told my friends and they couldn’t believe I had stopped drinking.</td>
</tr>
<tr>
<td><strong>No (N=8)</strong></td>
<td>No additional responses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Would you recommend this screening to your family or friends?</th>
<th>Participant responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes (N=13)</strong></td>
<td>Only if I was concerned about their drinking.</td>
</tr>
<tr>
<td></td>
<td>Yes, to make them aware.</td>
</tr>
<tr>
<td></td>
<td>Yes, to help them be aware of the low risk drinking levels.</td>
</tr>
<tr>
<td><strong>No (N=3)</strong></td>
<td>No additional responses</td>
</tr>
</tbody>
</table>
Discussion of the Findings

The purpose of this study was to compare the impact of using Screening, Brief Intervention, Referral to Treatment (SBIRT) on the alcohol misuse behavior on students attending a California community college and accessing care at the student health center to a comparison group who self-assesses with the AUDIT screening tool at the National Collegiate Alcohol awareness event but did not receive a brief intervention. In addition, students' perceptions of the screening process and brief intervention were analyzed.

The results of this study supported the hypothesis, California community college students who had a positive screening for alcohol misuse and received a brief intervention through health services and referral to treatment had significantly lower alcohol use at follow up compared to students who only received written material (p<.05). The experimental AUDIT mean scores decreased from 10.25 to 6.75, while the comparison group mean scores decreased from 11.18 to 9.59. In the experimental group 93.8% (n=15) lowered their score and in the comparison group 66.7% (n=26) lowered their score. Thus utilizing SBIRT in the health center can be an effective tool to reduce high-risk alcohol behavior of community college students.

The study addressed one research question: what are California community college students' perceptions of the screening and brief intervention process? At the time of follow-up, students in the experimental group were asked five follow-up questions. When asked what they thought of the screening and if it had been
useful, students all thought the screening was useful and that they had received new information. Many did not realize that their drinking level was at-risk and one student stated that they had stopped drinking after the screening. Students stated that after the screening they changed their behavior with an increase in awareness of their drinking level, they limited their consumption, and that the screening affirmed their decision to change their behavior. Student’s emotional response to the screening and intervention was a positive self-awareness and empowerment with new knowledge. Some students expressed experiencing anxiety. Many students did not realize their drinking levels were putting them at risk and that awareness created anxiety, which may have contributed to moving them through the stages of change to relieve that response and create emotional harmony or stability. Students had positive perceptions of the screening process and valued the information regarding their alcohol use and the students were willing to share the information they received with family members and friends if they had a concern regarding their alcohol use.

These findings support the literature, that SBIRT and utilization of a brief intervention has an impact on alcohol use. With only a 15-minute brief intervention, alcohol behaviors are impacted and AUDIT scores decrease. Students also gave positive feedback about the intervention. Therefore, SBIRT can be successfully implemented in community college health centers and clinic operations are not negatively affected.
CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

Introduction

Alcohol use among college students continues to be an issue on college and university campuses. Healthy Campus 2010 followed the national Healthy People 2010 goals and objectives related to the health of college students. Burwell, Dewald, and Grizzell (2010) published the results of their mid-course review of theses objectives regarding college student alcohol use. They found that high-risk alcohol use had not changed from 2000 to 2005. Hingson (2010) conducted a literature review and scientific review to determine current alcohol related trends to update the National Institute on Alcohol Abuse and Alcoholism (NIAAA) 2002 report and found that high-risk alcohol consumption increased from 41.7% to 45.2%.

Studies of Screening, Brief Intervention, and Referral to Treatment (SBIRT) have found that SBIRT is effective in decreasing alcohol use in the four-year university and college setting. Seigers and Carey (2010) conducted a literature review of 12 of these studies published between 2000 and 2010: ten out of the 12 showed a decrease in alcohol use. The current study found SBIRT to be an effective strategy to decrease alcohol use of California community college students who visited a health center and student participants reported positive perceptions of the screening and intervention process.
Conclusions Relevant to Hypothesis and Research Question

The purpose of this study of community college students at high-risk for alcohol abuse was to examine the effect of a brief intervention based on motivational interviewing. One hypothesis and one research question guided this study. California community college students who have a positive screening for alcohol misuse and receive a brief intervention and referral to treatment will have a significant reduction in their alcohol use at follow-up compared to students who only received written material. What are California community college students' perceptions of the screening and brief intervention process?

This study had a quasi-experimental before-after research design with a nonequivalent comparison group of community college students at high-risk for alcohol use. Alcohol use was assessed by the Alcohol Use Disorder Identification Test (AUDIT) screening tool. Pre-test and post-test high-risk alcohol use was defined as a score of six or more out of 40. The experimental group of students was recruited while seeking routine care in the student health center. Their post-test AUDIT scores were compared to the scores of a comparison group of students recruited from Alcohol Awareness Week event participants who only received written material.

Descriptive qualitative inquiry also was conducted with the experimental group to determine the students' perceptions of the screening process and the brief intervention. Themes and patterns were discovered in the narrative gathered from the student interviews.
These findings support the literature that using SBIRT is an effective strategy in lowering alcohol use with students who misuse alcohol. The statistical analysis determined that the experimental group had significantly lower post-test AUDIT scores compared to the control group. Utilizing SBIRT in a California community college is an effective way to impacting alcohol use and decrease alcohol consumption. This strategy should be promoted and other California community college health centers should implement SBIRT as an effective tool in lowering high-risk alcohol use on campus.

It is worth noting that a majority of the experimental group (59.0%) had a family history of alcohol abuse, which supports the familial tendency of alcohol abuse. Unfortunately, no family history data were collected from the comparison group and they had higher alcohol risk AUDIT scores. The majority of the experimental group members were second year students (72.7%). The mean age of the experimental group was 20.9 and 36.4% were under the age of 21. The percentage of students who are under the age of 20 on this community college campus was 26.6% for 2009-2010.

The pre-test prevalence of high-risk alcohol use in the experimental group (22.8%) was lower than the comparison group (37.6%), both lower than the 45.2% alcohol consumption among 18-24 year old college students noted in the literature (Hingson, 2010; Hingson, Zha & Weitzman, 2009). The 2010 American College Health Association National College Health Assessment results reveal a 35.1% prevalence of drinking five or more drinks on occasion for the national
sample of college students, compared to 27.1% of students in the HSACCC consortium group and 26.9% for this sample from the study site community college. The low rate of alcohol risk found in the health center study supports the findings of Schaus, Sole, McCoy, Mullett, and O'Brien (2009), at 28% in their health center sample compared to 40-44% in the national college samples reported by the CAS.

There are many explanations for why the comparison group had a higher pre-test prevalence of high-risk alcohol behavior than the experimental group. The kind of student who accesses care at the health center is possibly different than that of a random sampling of students in the student center. They may generally possess more positive health behaviors and that may have been reflected in the lower prevalence rate of alcohol use.

Bernstein, et al. (2007) found that that one 15-minute conversation with a primary care provider decreased drinks per week by 13-34% and increased the number who drank at a moderate to safe level by 10%-19%. Although using the brief intervention is more effective in changing high-risk alcohol behavior, the results of the comparison group show that revealing the AUDIT score and written material also impacts alcohol related behaviors. Although no gender or academic year differences were found in the AUDIT alcohol use scores, it is interesting to note that females decreased their score to a greater degree then males and second year students lowered their scores to a greater degree then first year students.
The brief intervention given to the experimental group consisted of discussion of the students' score, comparison to general college student alcohol use, definition of a standard drink, recommended drinking levels, risks related to alcohol use and recommendations. The brief intervention used motivational interviewing strategies and utilized the stages of change developed by Prochaska (Prochaska & DiClemente, 1982). Each student also received a pamphlet developed by the Center for Alcohol & Drug Studies and Services titled, Alcohol Use: Reducing Risks (see appendix D). The average time for the brief intervention was 15.8 minutes and a range of 5 – 20 minutes. Ehrlich, et al. (2006) showed a median time for their brief intervention as 14 minutes.

Adding an alcohol screening to a busy health center has a great impact on patient flow. To be effective the brief intervention must be long enough to impact alcohol use behaviors in individual students but also not create a barrier for the care delivery service. The results of this study show that a 15-minute brief intervention for students with high-risk AUDIT scores impacted their alcohol behaviors; their AUDIT scores decreased and clinic operations were not negatively affected.

Students in the experimental group were asked five follow-up questions to ascertain their perceptions of the screening process. Students generally had positive feedback regarding the screening and brief intervention. They thought it was a useful process and it added value to the visit and they felt that they benefited from the screening. Most students had some degree of shock or
amazement regarding their score that indicated that their drinking behavior was at risk. Many were completely unaware of the risk and believe that they had sufficient protective behaviors to keep them safe in regards to their alcohol use. Ninety percent of the students who received the SBIRT intervention changed their behavior and their alcohol consumption because of the screening and the brief intervention.

Students also were willing to share the information they learned with family members or friends if they were concerned with their alcohol consumption. It is interesting that half of the experimental group shared the information they received. Those that shared what they had learned expressed being concerned about a family member or friend, which may support the statistic that 56.2% of the experimental group had a family history of alcohol abuse. The majority of the experimental group said they would recommend this screening to a family member or a friend. Many of the students stated that they would recommend the screening if they had a concern about a family member or friend's alcohol use.

Limitations of Study

The primary limitation of this study involved the level at which the sample represented the college population as a whole. First the sample was not selected randomly from the college population. Therefore selection bias may exist and one cannot assume that participants in the experimental group are similar to the comparison group participants. There may be differences in the type of student
who seeks care in the health center versus students who may not. The students who access care in the health center or attend wellness events may possess characteristics that make them more resilient or able to change their behavior more readily than other students. This represents sampling bias. Demographic data were only collected on the experimental group therefore comparison of the experimental group and the comparison group demographic data was not done and equivalence of the two groups was not examined. This study was also only conducted on one California community college campus and therefore, the results cannot be generalizable to other community college campuses.

Self-report data can also be a limitation because the data only represents the information participants are willing to share (Polit & Beck, 2008, p.324). Hagman, Cohn, Noel, and Clifford (2010) did a study analyzing the validity of self-report data regarding alcohol use among college students. The authors used collateral informants to corroborate self-report data; 70.8% to 79.6% of the participants had agreement. They concluded that self-report data from college students regarding their alcohol use is reasonably accurate. The investigator minimized bias effect by informing students about confidentiality and that their participation would not impact their academic standing at the college.

The AUDIT screening tool includes several questions that ask about a behavior that occurred in the last year. Re-screening with the same tool after 30 days may be a limitation. These questions with a year time frame would stay the same regardless of the change in behavior and the score may not reflect the
actual alcohol behavior, which may be in the low risk range. It is possible that students may have lower risk than the score represents.

The recommended cut off score for the AUDIT is eight but it is acceptable to decrease or increase the cut off score depending on the population of interest (Babor, et al., 2001). Walters and Baer (2006) recommend at cut off score of 6 when screening college students. The varying cut off scores in the literature creates a limitation. Lowering the cut off score may increase the inclusion of students into the study whose risk may in fact be low, but with the high prevalence of high-risk alcohol use in the college population this may not have affected the sensitivity or specificity of the AUDIT.

Future Research and Recommendations

Alcohol use among college students will continue to be an area where more research is needed. The results of this study showed a significant decrease in alcohol consumption by lowering of the AUDIT score at 30 days after a brief intervention. Future research needs to evaluate the long term effect and re-evaluate students six months, nine months and 12 months after the brief intervention. Seigers & Carey (2010) did a review of 12 studies that examined SBIRT and the authors found that only one study included four post-intervention assessments and the remaining studies did one post-intervention assessment within three months. The authors suggest future research to conduct multiple
post-intervention assessments. In that case, the post-test question regarding alcohol use should reflect the time period since the intervention.

The AUDIT is a reliable and validated tool but the scoring levels identifying persons at high-risk for alcohol use have varied. Future research needs to evaluate the screening tools available and determine which tool is most appropriate in the college setting and determine the criteria for scoring in the college population. Ultimately, more research should focus on adolescent alcohol use and determine where, how and what appropriate interventions can impact alcohol use prior to entering college and how to limit under-age alcohol use and access to alcohol. Schaus, et al. (2009) found the average age of first drink to be 15.8 years of age and that these students continue their high-risk alcohol use when they enter college. This suggests that longitudinal studies of high school cohorts entering college would be in order.
APPENDIX A

ALCOHOL USE DISORDERS IDENTIFICATION TEST

(AUDIT)
### AUDIT

PATTEN: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential, so please be honest.

For each question in the chart below, place an X in one box that best describes your answer.

**NOTE:** In the U.S., a single drink serving contains about 14 grams of ethanol or "pure" alcohol. Although the drinks below are different sizes, each one contains the same amount of pure alcohol and counts as a single drink:

- 12 oz. of beer (about 10% alcohol) = 8-9 oz. of malt liquor (about 7% alcohol) = 5 oz. of wine (about 12% alcohol) = 1.5 oz. of hard liquor (about 60% alcohol)

<table>
<thead>
<tr>
<th>Questions</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you have a drink containing alcohol?</td>
<td>Never</td>
<td>Monthly or less</td>
<td>2 to 4 times a month</td>
<td>2 to 3 times a week</td>
<td>4 or more times a week</td>
</tr>
<tr>
<td>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</td>
<td>1 or 2</td>
<td>3 or 4</td>
<td>5 or 6</td>
<td>7 to 9</td>
<td>10 or more</td>
</tr>
<tr>
<td>3. How often do you have 5 or more drinks on one occasion?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>4. How often during the last year have you found that you were not able to stop drinking once you had started?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>5. How often during the last year have you failed to do what was normally expected of you because of drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>7. How often during the last year have you had a feeling of guilt or remorse after drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>8. How often during the last year have you been unable to remember what happened the night before because of your drinking?</td>
<td>Never</td>
<td>Less than monthly</td>
<td>Monthly</td>
<td>Weekly</td>
<td>Daily or almost daily</td>
</tr>
<tr>
<td>9. Have you or someone else been injured because of your drinking?</td>
<td>No</td>
<td>Yes, but not in the last year</td>
<td>Yes, during the last year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?</td>
<td>No</td>
<td>Yes, but not in the last year</td>
<td>Yes, during the last year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total**

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APPENDIX B

APPLICATION FOR DEPARTMENTAL APPROVAL

TO CONDUCT RESEARCH
July 29, 2010

Ms. Alexandra Bell
c/o: Prof. Margaret Beaman
Department of Nursing
California State University
5500 University Parkway
San Bernardino, California 92407

Dear Ms. Bell:

Your application to use human subjects, titled “Screening, Brief Intervention, and Referral to Treatment for Alcohol Use in a Community College,” has been reviewed and approved by the Institutional Review Board (IRB). The attached informed consent document has been stamped and signed by the IRB chairperson. All subsequent copies used must be this officially approved version. A change in your informed consent (no matter how minor the change) requires resubmission of your protocol as amended. Your application is approved for one year from July 29, 2010 through July 28, 2011. One month prior to the approval end date you need to file for a renewal if you have not completed your research. The protocol renewal form is on the IRB website. See additional requirements of your approval below.

The CSUSB IRB has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval notice does not replace any departmental or additional approvals which may be required.

Your responsibilities as the researcher/investigator reporting to the IRB Committee include the following requirements. You are required to notify the IRB of the following: 1) submit a protocol change form if any substantive changes (no matter how minor) are made to your research protocol/protocol, 2) if any unanticipated/adverse events are experienced by subjects during your research, and 3) when your project has ended by emailing the IRB Coordinator. Please note that the protocol change form and renewal form are located on the IRB website under the forms menu. Failure to notify the IRB of the above may result in disciplinary action.

You are required to keep copies of the informed consent forms and data for at least three years.

If you have any questions regarding the IRB decision, please contact Michael Gillespie, IRB Compliance Coordinator, at (909) 537-7021, or by email at mgillespie@csusb.edu. Please include your application identification number (above) in all correspondence.

Best of luck with your research.

Sincerely,

Sharon Ward, Ph.D.
Chair
Institutional Review Board

cc: Prof. Margaret Beaman, Department of Nursing

909.537.7588 • fax 909.537.7028 • http://irb.csusb.edu/
5500 UNIVERSITY PARKWAY, SAN BERNARDINO, CA 92407-2393
Identification of Project:
Principal Investigator: Alex Bell, RN
Department: Student Health Services
Project Classification: Research Project, Thesis Project
Title of Project: Screening, Brief Intervention and Referral to Treatment for Alcohol Problems in a Californian Community College Student Health Center
Starting Date: September 1, 2010
Completion Date: June 1, 2011
External Funding: None

Description and Source of research Subjects:
The human subjects for this project will be currently enrolled students 18 years and older who present to Student Health Services for care or services offered by Student Health Services nursing staff and have an AUDIT score of eight or greater. Students who present with life threatening conditions, mental incompetence, or communication deficits will be excluded. Students who participate in the National Collegiate Alcohol Awareness Week event will have an opportunity to self assess using the AUDIT and those with a score of eight or greater will be asked to participate in the project.

Methods and Procedures:
Students who present to Student Health Services nursing staff and have an AUDIT score of eight or greater will be asked to participate in the screening and research project. Consent will be obtained in writing. The AUDIT screening tool will be administered to the student and the student will be told the score they received and its significance. Any score at or above 8 will be given a brief intervention using motivational interviewing strategies which will include: (1) to give feedback and assess general alcohol use and discuss general population levels; (2) offer information regarding adverse effects of excessive alcohol use; (3) recommendations to reduce alcohol use will be discussed along with any referrals to counseling if required. One month after initial assessment, the principal investigator will contact the students by phone to administer the AUDIT screening tool again and assess any changes in the score. Follow up questions will be included in the debriefing to assess student perceptions of screening and intervention process. During the National Collegiate Alcohol Awareness Week, students who participate in the event will have the opportunity to self assess with the AUDIT screening tool. Those with scores of eight or greater will be asked to participate in the project. They will receive their score, literature and referral information. In one month they will be contacted and reassessed with the AUDIT screening tool.

Specific Risks and Protection Measures:
Students will be given the consent to read and then sign. Participation is voluntary and any identifying information will be held confidential and then destroyed after data collection.

Benefits:
The Screening, Brief Intervention and Referral to Treatment program has been implemented in Emergency Rooms, Trauma Centers and Counseling/Mental Health Centers. Health Services
Association of California Community Colleges (HSACCC) has encouraged all Health Centers to implement this program. This intervention has been shown to decrease alcohol use and mitigate high-risk behaviors. This project will assess the success of this program in the Community College Student Health Center setting.

Methods for Obtaining Informed Consent:
Students will be informed about the research project and screening. A written consent form will be given for the students to review and sign. Participation is voluntary and any identifying information will be held confidential and destroyed after data collection is complete.

Qualification of Investigators to Conduct Research:
The primary investigator is a Registered Nurse who is in the process of obtaining a Master's Degree in Public Health Nursing from California State University, San Bernardino. This research project is part of her thesis project. She has attended two SBIRT training sessions; 1) background information webinar; 2) motivational interviewing training at HSACCC annual conference. She has completed the Collaborative Institutional Training Initiative (CITI) for Human Research. IRB approval will also be obtained through California State University, San Bernardino.

Facilities To Be Used:
Student Health Center at Allan Hancock College, W-12 and Student Center during National Collegiate Alcohol Awareness Week.

Responsibility of the Principle Investigator:
The principle investigator subscribes to the standards of professional ethics in all research, development and related activities involving human subjects. The Principle investigator further agrees that:

a. Approval will be obtained from the Director of Institutional Research and Planning before making any changes to this research project.
b. Development of any unexpected risks will be immediately reported to this office.
c. A progress report will be completed and submitted to the Institutional Research and Planning office upon completion of the project.

Department Approvals:

Name: Salvador Castillo, Director Research and Planning Date: 2 June 2010

Name: Diane Glaser, RN, Coordinator Student Health Services Date: 6-2-10

Name: Bill Cordero, Vice President of Student Services Date: 4/3/10
APPENDIX C

INFORMED CONSENT
INFORMED CONSENT

The study in which you are being asked to participate is designed to investigate alcohol use among Community College students. This study is being conducted by Alex Bell, RN, under the supervision of Diane Glaser, RN, Coordinator Student Health Services Allan Hancock College & Margaret Beaman, PhD, RN, Faculty California State University, San Bernardino. This study has been approved by the Institutional Review Board, California State University, San Bernardino; and the Institutional Review Board, Allan Hancock College.

PURPOSE: The purpose of this research project to measure the effect of a screening and brief intervention for alcohol use has on future alcohol use by Community College students.

DESCRIPTION: You will be asked 10 questions regarding your alcohol use and be given a score that compares your use to others. If your score is in the moderate range you will have further discussion regarding your alcohol use. One month after this screening the nurse will contact you via phone and administer the 10 questions again and ask you some questions regarding your experience.

PARTICIPATION: Participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

CONFIDENTIALITY: Any information you provide for this project will be confidential. Your screening score will be recorded in your medical record, which is kept confidential in Student Health Services. Your name, contact information, screening and score will be kept in a confidential file locked in a private drawer in Student Health Services until data collection is complete. At that time all identifying information will be destroyed and a subject number will be assigned to your information. No digital files will be created with identifying information. All digital files of the research project will be password protected.

DURATION: After your initial screening you will be contacted by phone in one month to be re-screened.

RISKS: There are no foreseeable risks to your participation in the research. Discussion regarding alcohol use may be upsetting for some participants. Counseling services are available through Student Health Services for support.

BENEFITS: A possible benefit of participating in this research may be an increase in your understanding regarding your alcohol use and the support services available to you.
VIDEO/AUDIO/PHOTOGRAPH: This research will not include video, audio or photograph.

CONTACT: If you have any questions regarding this research project at any time or have any concerns please contact: Alex Bell, RN, BSN, College Nurse at 805-922-6966, ext 3212; Diane Glaser, RN, Coordinator of Student Health Services at 805-922-6966, ext: 3212; or Margaret Beaman, PhD, RN, Californian State University, San Bernardino at 760-341-2883, ext 78172.

RESULTS: Results of this research project can be obtained at Allan Hancock College, Student Health Services, 805-922-6966, ext 3212 or California State University, San Bernardino, library after final review.

SIGNATURE: ___________________________ Date: ___

Contact Information for Follow-up:

________________________________________

Approximate Date of Follow up:___________
I haven’t thought about changing my drinking …
1. Talk about it with a close friend.
2. Decrease alcohol consumption, and drink water and non-alcoholic beverages.
3. Make a plan to improve your drinking. Consider increasing your conscious awareness of how alcohol affects your life.
4. Check all that apply.
   - emotional
   - financial
   - long-term
   - work
   - legal
5. Talk to a professional counselor about your drinking.

I’m ready to be action to reduce or stop drinking …
1. Make a plan to reduce or stop drinking. Know what to do in different situations.
2. Reduce, plan and practice new alcoholic things.
3. Practice new things to help you be more comfortable.
4. I’ve been thinking about the reasons why I drink and the consequences of my drinking.
5. Make a plan to reduce or stop drinking and need it.
6. Make a plan to manage your drinking and need it.
7. Contact the Center for Alcohol & Drug Studies.

What’s Good & Not So Good About Drinking

<table>
<thead>
<tr>
<th>Short-Term</th>
<th>Good (Social)</th>
<th>Not So Good</th>
</tr>
</thead>
</table>

PERSONAL CHANGE PLAN

1. Reduce or stop drinking.
2. Make a plan to reduce or stop drinking.
3. Practice new things to help you be more comfortable.

Doctor's Recommended Drinking LIMITS

For Men

On average, no more than 2 standard drinks per day, or no more than 14 standard drinks per week.
No more than 4 standard drinks per occasion.

For Women

On average, no more than 1 standard drink per day, or no more than 7 standard drinks per week.
No more than 3 standard drinks per occasion.

For Persons 65 and Older

On average, no more than 1 standard drink per day, or no more than 7 standard drinks per week.
No more than 2 standard drinks per occasion.

What is a STANDARD DRINK?

- 12 ounces of beer or wine cooler
- 5 ounces of wine
- 1.5 ounces of hard liquor
  (vodka, tequila, whiskey, scotch, etc.)

Alcohol RISK Levels

- Severe: 2%
- High: 3%
- Moderate: 14%
- Low: 39%
- Non-Risk: 42%

ADVICE: If You Are...

Non-Drinker/Low Risk:
Stay below or within the recommended drinking limits.

At-Risk or High Risk:
Reduce drinking to within the recommended limits.

Severe Risk:
Abstain from alcohol and get further assessment.

REMINDER:
There are times when even one drink can be too much. You should not drink when driving, operating machinery, or taking medication. You also shouldn't drink if you have a medical condition affected by alcohol, are under the legal drinking age of 21, pregnant or nursing.

RISKS Related to Alcohol

Short-Term Health Risks

- Vomiting
- Headache
- Hangover
- Bed Brunch
- Dehydration
- Impairment

Long-Term Health Risks

- Liver damage
- Gastrointestinal disease
- Memory loss
- Inflammation of pancreas
- Reduced resistance to infection
- Weakness of heart muscle, heart failure
- Developmental delay, deformed or low birth weight babies
- Impaired coordination leading to falls
- Can hide or mimic symptoms of other illnesses
- Can decrease effectiveness of medications
- Can worsen gastritis and peptic ulcers
- Can increase effects of hypertension, diabetes, & depression

Legal Risks

- Being arrested for public intoxication or DUI
- Losing your license

Financial Risks

- Losing your job due to poor work performance resulting from drinking
- Spending money on alcohol instead of on food, rent, or your family

Personal Risks

- Relationships threatened when family and friends express concerns about your alcohol use
- You may not be setting the example you would like for your children and others
- Your behavior may embarrass you when you are drinking
- You may put yourself in risky situations when drinking

APPENDIX E

EXPERIMENTAL GROUP FOLLOW-UP

QUESTION RESPONSES
1. WHAT DID YOU THINK OF THE SCREENING? WAS THE TIME IT TOOK USEFUL?

#3 Was not aware of the dangers and the information given was new to him.
#4 Screening was useful and good, it is good to know where you are at.
#6 Useful, I didn’t think my drinking level was that bad.
#7 I thought the screening was useful
#5 Surprised, useful.
#8 It is a normal process for visit.
#10 Yes, I thought it was useful.
#11 It was useful and quick.
#12 Useful
#13 Yes, I think it is useful. There are a lot of students that need help.
#14 Yes, it was useful and new information.
#15 I thought it was super useful and I stopped drinking after the screening.
#16 It was useful, quick and easy.
#17 I thought it was useful.

2. HOW DID IT CHANGE YOUR BEHAVIOR?

#3 Drank less, did not go over the limits.
#4 The screening score shocked me and I cut down a beer or two
#6 I am aware of what the normal levels are so I don’t think about drinking as much.
#7 It made me more aware of my drinking, I don’t drink anymore.
#5 I cut down a lot
#8 More aware of drinking and normal levels
#10 I was already in the process of making changes.
#11 I slowed my drinking down to the recommended levels in the pamphlet.
#12 I realized how much I was drinking
#13 It made me think about my friends and how much are they drinking.
#14 I cut down and watched how many drinks I was drinking.
#15 I stopped drinking and lost lots of weight, probably from the beers.
#16 I have only had one drink in the last 30 days.
#17 It made me think about how much you are supposed to drink.

3. DID YOU SHARE THE INFORMATION WITH ANYONE ELSE?

#3 No
#4 No
#6 No
#7 Yes, I shared the pamphlet with my brother-in-law because I am worried about his drinking. It made him think about it.
#5 Yes, my husband.
#8 Yes, the pamphlet with friends. They wondered why boys got to drink more than girls.
#10 No
#11 Yes, my friends disagreed with the 7 drink limit.
#12 No
#13 Yes, my friend who has a problem and she is now going to rehab.
#14 Yes, my girlfriend, she thought the limits were ok.
#15 I told my friends and they couldn’t believe I had stopped drinking
#16 No
#17 Yes, my girlfriend

4. **WOULD YOU RECOMMEND THIS SCREENING TO YOUR FAMILY OR FRIENDS?**
#3 Maybe
#4 Yes
#6 Yes
#7 Yes
#5 Only if I was concerned about their drinking.
#8 Yes, make them aware
#10 Yes
#11 Yes
#12 Yes, my friends
#13 Yes, see above
#14 Yes
#15 Yes to help them be aware of the low risk drinking levels.
#16 Yes
#17 No

5. **HOW DID THIS SCREENING MAKE YOU FEEL?**
#3 Increased the importance of health consciousness
#4 Shocked
#6 I did not really feel anything.
#7 It made me feel uncomfortable, I felt stupid and shameful.
#5 I felt informed.
#8 Confused, unaware of my drinking being at risk.
#10 It made me think about my drinking and what I do and what I don’t do.
#11 Made me feel more self aware.
#12 Made me think about how much I was drinking and to say no more.
#13 It made me feel good about myself, you don’t need alcohol to have a good time.
#14 I felt ok, I learned more of the signs of alcoholism.
#15 Freaked out.
#16 Felt put on the spot but not judged.
#17 It makes me feel like I am doing the right thing now.

This questionnaire was developed by the author, Alexandra A. Bell, RN.
REFERENCES


