

## Effectiveness of Cognitive Behavioral Therapy in Treatment of Patients with Alcohol Dependence at Chainama Hills Hospital in Lusaka Zambia

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### Abstract

Global harmful alcohol use accounted for 5.9% of deaths, 5.1% disease burden in 2012 [43]. In Zambia, 15.6% drinks, where heavy consumption stands at 43.7%. The aim of this study was to investigate the effect of CBT in treatment of patients (pts) with alcohol dependence. The first specific objective to determine the differences in treatment outcome between CBT and non-CBT patients with alcohol dependence, was analyzed by MANOVA. The second objective to evaluate the effect of demographic factors on CBT treatment outcome in patients with alcohol dependence was analyzed by general regression analysis. The third objective to find out whether CBT had different effect on some alcohol dependence variables and not others was analyzed by MANOVA. The study design was randomized controlled trial (RCT) having intervention and control groups. Intervention group received [8] CBT sessions on a weekly basis whereas control group received treatment as usual. All patients met the DSM V and AUDIT diagnostic criteria for alcohol dependence. Using CI 95%, 0.05 alpha and power of 1-beta (80%), the sample size was calculated at 50 and was divided into two groups. Patients were recruitment by systematic sampling every third patient. Probability sampling was used to assign patients to intervention or control group. MANOVA to determine the differences in treatment outcome between CBT and non-CBT patients with alcohol dependence was not statically significant in pretest,  $P > 0.05 = 0.23$ , but the results showed statistical significance in post test data,  $P < 0.05 = 0.01$ . Hence, the alternative hypothesis was not rejected. The general linear regression model for the second object demonstrated that demographic factors were not statistically significant neither in CBT group data nor in the control group data, that is equal to 0.29,  $P > 0.05$  and 0.38,  $P > 0.05$ . Furthermore, MANOVA analysis showed inferential statistical significance in all the alcohol dependence variables with the overall sig. 0.001,  $P < 0.05$ . Each of the variables was represented by statistical significance of 0.001. Thus, CBT presented statistical significance on each and every variable of alcohol dependence. Therefore, CBT is more effective in treatment of patients with alcohol dependence than standard treatment.

**Keywords:** Effect; Cognitive-Behavioural Therapy; Alcohol Dependence

### Introduction and Background

Alcohol dependence is a cluster of behavioral, cognitive, and physiological phenomena that develop after repeated alcohol use and typically includes a strong desire to consume alcohol, difficulties in controlling the use, persisting in the use despite harmful conse-

quences, a higher priority given to alcohol use than to other activities and obligations, increased tolerance, and sometimes a physiological withdrawal state [2].

Alcohol dependence is regarded to be one of the most detrimental phenomena of the modern society leading to degradation, destruction and death. Despite the risks and public information of complications caused by alcohol dependence, the victims of this deadly trap have kept on increasing [1]. Alcohol dependence causes major impairments and severe complications leading to deterioration in general personal health, social and professional wellbeing [35]. Harmful alcohol consumption accounts for more than 3.3 million deaths each year at the global level. In 2012, 5.9 percent of all deaths and 5.1 percent of burden of disease and injury were attributable to alcohol globally [51]. Furthermore, WHO ascertained that the harmful use of alcohol caused about 3 million deaths which is about 5.3% of all deaths in 2016 [52]. The deaths arising from alcohol abuse is more than the ones arising from HIV/AIDS, diabetes and tuberculosis. In 2016, of all deaths attributable to alcohol consumption worldwide, 28.7% were due to injuries, 21.3% due to digestive diseases, 19% due to cardiovascular diseases, 12.9% due to infectious diseases and 12.6% due to cancers. Alcohol abuse caused a large burden of disease and injury in 2016, causing 132.6 million Disability-adjusted life years (DALYs) which represented 5.1% of all DALYs in that year; as with the mortality burden [52].

World Health Organization conducted a research in Zambia and concluded that there was alarming increase in the levels of alcohol misuse and trade in Zambia [49]. In addition, there had been a massive increase in alcohol supply and production, both formal and informal. Informal production involves home brewed like 'lutuku/kachasu, katubi, katata'. The content of alcohol levels in informal brewed is not known or monitored and thus, its impact on human health is not known [49].

Alcohol dependence is of paramount concern in Zambian adolescents. There is a great alcohol abuse and dependence problem among the Zambian youths covering about 60 percent of them especially those from poor communities [9,29]. The reason is that there is no serious restriction on the sale of alcohol. Besides, those who are unable to buy, resort to making alcohol themselves. There has also been increasing trends of heavy alcohol use amongst the females in Zambia. It has been observed that females resort to binge drinking which has had a high social impact on their family life [26]. Further, harmful alcohol and drug use is linked to about 70 percent of premature deaths [29]. Acuda, *et al.* identified that 15.6 percent of the total Zambian population drinks out of which heavy alcohol consumption accounts for 43.7 percent [16].

Chainama Hills College Hospital, a national referral center for all psychiatric conditions in Zambia, reported that alcohol disorders were the highest cause of admission to the hospital amounting to more than 50 percent [8]. In addition to being the highest in admission, alcohol disorders also record the highest levels of relapses. This in turn, increases the health burden and pressure on the insufficient national resources. Furthermore, monthly reports on admission at Chainama Hospital from January, 2017, 2018, 2019 to December, 2017, 2018 and 2019 confirm that alcohol is a major cause of admission to the hospital covering about 42 percent [8].

Referrals for alcohol abuse and alcohol related disorders are highest among patients in the Psychiatry ward of the University Teaching Hospital (UTH) in Lusaka, Zambia as compared to the referrals made for other psychiatric conditions, as reported in the study done by Paul and Ncheka, 2017 [37].

Alcohol has a psychoactive substance with dependence-producing properties. There are many alcohol related problems and disorders ranging from physical, psychological to socio-economic in nature [51]. Alcohol use and problems related to it are different around the world, but the burden of disease and death is almost the same. It was reported that alcohol is on the top five risk factors not only for disability and disease but also for death world over. Furthermore, alcohol contributes to the cause of more than 200 disease and injury conditions [50].

Alcohol causes great intentional and unintentional injuries. Intentional injuries include violence and suicide while unintentional includes accidents of various kinds. Abusers of alcohol usually become a danger to self, others and to property. This can either be intentional such as homicide, violence or gender based violence (GBV), or unintentional such as auto-mobile accidents or accidents involving machinery at work [51]. Furthermore, alcohol robs many people and nations at large of their productivity by causing mental, physical disability as well as death. This eventually results in perpetual individual, family, community as well as national poverty.

Bandura's social learning theory argues that alcohol abuse arises from modeling those who have positive expectations about alcohol abuse [19]. Patients suffering from alcohol abuse have particular thinking styles which lead to continuation of their disorder and prevention of change [19]. The thinking patterns are a consequence of beliefs related to expectations, permissions and general individual's beliefs on alcohol abuse. These beliefs are concerned with thoughts and ideas about pleasure, problem solving, importance, and escape [7].

Studies done in different parts of the world revealed lack of effectiveness of most alcohol abuse and dependence treatments because of heavy emphasis on pharmacotherapy disregarding psychological interventions. Most of the patients undergoing such treatments experienced relapse even after a long period of abstinence.

However, mental health Gap Action Program Intervention Guide (mhGAP-IG), points that psychosocial interventions are very important in the treatment of alcohol dependence and relapse prevention [49]. In spite of that fact, it was ascertained by Luo and Mutombo, that psychological services and follow-ups were rare in Zambia with regard to treatment of alcohol dependence [23]. Relapse levels were very high. Sheikh and Paul 2017, in their study on Brief Relapse Prevention Intervention in patients with Alcohol Dependence, found that the number of days of abstinence were five times higher in the intervention group than in the control group, thereby ascertaining the effectiveness of therapy in promoting abstinence [41]. There is thus a great need to come up with an effective psychological intervention to address alcohol dependence in Zambia. One prominent psychological intervention for alcohol dependence treatment and relapse prevention used in many parts of the world in recent years is the cognitive-behavioral therapy model (CBT) which focuses on treatment of psychological disorders and helping patients to restructure their thought processes, modify behavior and acquire coping skills necessary to manage risky situations. Many studies have been conducted on the effectiveness of CBT in treatment of alcohol abuse disorders, the results of which have proved its effectiveness while others have not [31].

CBT is a short-term therapeutic approach aiming at helping patients with alcohol disorders on the basis of behavioral change through acquisition of skills and learning from experiences. CBT aims at equipping patients with alcohol dependence with control over environmental factors and control how to interpret as well as to address stimuli in the environment seeing that in cognitive theories, cognitive processes are the main factors for behavior modification [7].

CBT strategies are based on the theory that in development of maladaptive behavioral patterns like alcohol abuse and dependence, learning processes play a critical role. Individuals in CBT therefore learn to identify and correct problematic behaviors by applying a range of different skills that can be used to stop alcohol abuse and to address dependence. A central element of CBT is anticipating likely problems and enhancing patients' self-control by helping them explore the positive and negative consequences of continued alcohol use, self-monitoring to recognize cravings early, identify situations that might put one at risk for use and developing strategies for coping with cravings and avoiding those high-risk situations. Research indicates that the skills learned through cognitive-behavioral approaches remain after the completion of treatment. Behavioral approaches help to engage people in treatment, provide incentives for them to remain abstinent by modifying their attitudes and behaviors related to alcohol dependence and increase their life skills to handle stressful circumstances and environmental cues that may trigger intense craving for alcohol and another cycle of compulsive abuse [30]. Cognitive therapy is a psychotherapeutic system that attempts to reduce emotional reactions and dysfunctional behaviors through creating change in defective thinking and maladaptive beliefs that underlie emotional reactions. The main objective of CBT is to create change both in patient's actions and thoughts [42].

### **Statement of the problem**

According to Range and Marllat, alcohol dependence is a major public health problem in the world [35]. In Zambia, there is a huge problem of alcohol abuse which complicates into different alcohol related disorders such as alcohol dependence and other mental disorders [29,43,50,51,52]. Alcohol dependence in Zambia increases economic and disease burden and hence produces massive pressure on the negligible national resources. As reported by Chainama Hills College Hospital, alcohol related disorders have been the highest cause of admission and relapse to the hospital accounting for over 50% of bed occupancy [8]. On the global level, research has shown that twelve month relapse rate for alcohol dependence is between 80 to 95%. With repeated relapses, patients become chronic and prognosis becomes poor [15,18]. Relapse is detrimental to treatment of addictive behavior by changing the outcome modalities. Despite the rampant incidences of alcohol related problems in Zambia, little if any work is done towards promotion of abstinence and relapse prevention. Therefore, most of these alcohol abusers end up with alcohol dependence. For this reason, there is need to investigate whether cognitive behavioral therapy (CBT) has an effect in promoting abstinence in patients with alcohol dependence seeing that it aims at restructuring cognitive processes, modifying dysfunctional behavior and helping patients acquire effective coping skills to deal with negative emotions, dysfunctional behavior and situations which could be triggers of alcohol abuse and dependence.

Successful long-term changes in alcohol dependence can be achieved only by reducing the rate of relapse [15,18,35]. There is an urgent need to come up with evidence based, most effective, efficient and cost effective intervention to treat alcohol dependence in Zambia. Cognitive behavioral therapy (CBT) has been used in many parts of the world as a major psychological approach to treatment of alcohol dependence as well as relapse prevention. Its effectiveness on alcohol dependence in promoting abstinence and relapse prevention has been heavily researched on in other parts of the world with results showing mixed effectiveness, that is, effective in some studies and showing little or no effectiveness in other studies. Despite several investigations done in many countries to determine the effectiveness of CBT, cultural perspectives were not taken into consideration. Thus, the results may not be generalized to Zambian situation unless localized investigation is done.

Besides, Luo and Mutombo, 2009, argued that psychological interventions were rare in Zambia with regard to the treatment of alcohol dependence and relapse prevention. Treatment mostly was confined to pharmacotherapy for detoxification purposes. Follow-ups were greatly neglected. This made treatment non holistic and in turn increasing the relapse levels as cognitive related issues were not being taken into consideration [23,41]. There is also under or lack of documentation in terms of what is prevailing on the ground in the area of CBT application and its effectiveness in Zambia.

### **Significance/Justification of the study**

Scientifically proved psychological intervention can be a pivotal component of health care and treatment of patients with alcohol dependence. CBT is a psychological approach that generally addresses the cognition, behavior and emotion of a human being. Therefore, it will be important to find out if CBT can also help individuals with alcohol dependence to abstain from alcohol abuse, prevent relapse, minimize their involvement in crime, making a positive change in other dysfunctional behaviors and above all, making a positive contribution to individual, community as well as national development.

If this study is proved effective in the promotion of abstinence in patients with alcohol dependence, it can help to reduce disease and economic burden imposed on the nation by alcohol dependence. It can also bring about holistic approach to alcohol dependence treatment where psychological interventions, CBT, would be very helpful in health care provision [43]. In addition, the study would help in addressing the cultural perspectives and documentation of the effect of CBT in the treatment of alcohol dependence in Zambia.

Alcohol abuse has been implicated in contributing to the cause of about 200 diseases and one of the top five risk factor in causing disability, disease and death. About 15.6 percent of Zambian population drinks alcohol out of which 43.7% of them engage in harmful alcohol consumption. Problems associated with alcohol dependence contribute massively to the national disease and economic burden, putting

great pressure on the already insufficient national resources hence making it extremely difficult for economy to be sustainable [29]. Various CBT research results have shown that CBT is about 63.6 to 73 percent effective in promoting abstinence and preventing relapse in patients with drug dependence [31,32,40].

**Null hypothesis**

There is no difference in treatment outcome between patients receiving CBT in additional to medical treatment (standard care protocol) and patients receiving treatment as usual with respect to abstinence promotion in patients with alcohol dependence.

**Alternative hypothesis**

Cognitive behavioral therapy is more effective in promoting abstinence in patients with alcohol dependence than treatment as usual.

**Aim/Overall Objective**

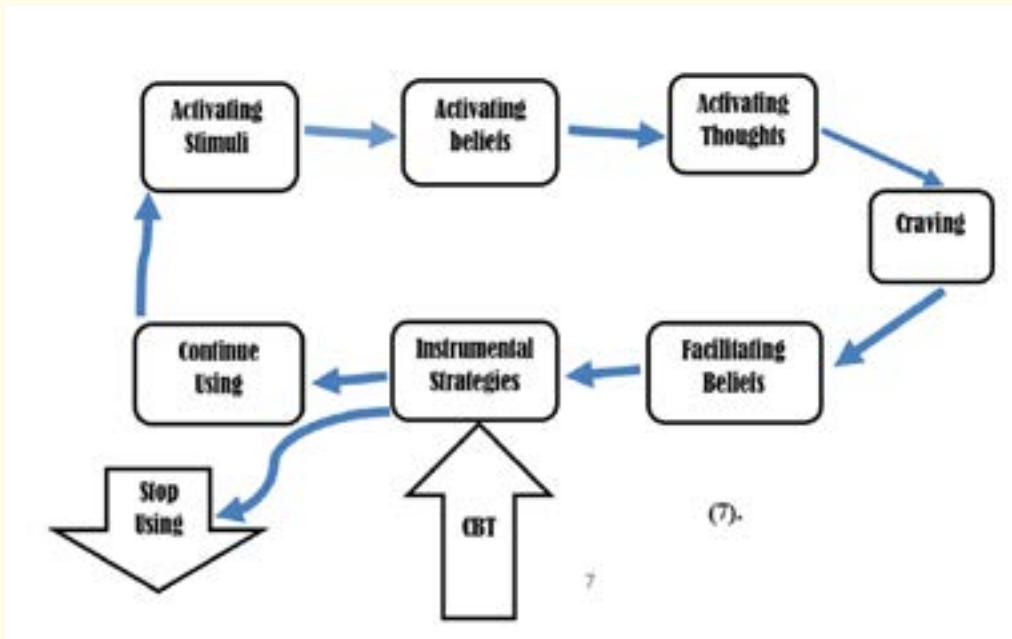
The aim of this study was to investigate the effect of cognitive behavioral therapy in treatment of patients with alcohol dependence.

**Specific objectives**

- i. To determine the differences in treatment outcome between CBT and non-CBT patients with alcohol dependence.
- ii. To evaluate the effect of demographic factors on control and CBT treatment outcomes in patients with alcohol dependence.
- iii. To find out whether CBT had different effect on some alcohol dependence variables and not others.

**Theoretical framework**

**Cognitive therapy model of addiction according to beck**



Figure

According to Beck, *et al.* individuals that present with alcohol dependence have intermediate and core beliefs about low frustration tolerance threshold, hopelessness, helplessness, boredom and love. Intermediate beliefs, also known as addictive beliefs can form various belief schemes that includes anticipatory, relief-oriented, permissive and control beliefs. Anticipatory beliefs manifest when a person who is about to start to use alcohol makes statements such as “it is fine to drink”. With continued use, anticipatory beliefs result into anticipation use and anticipation dysphoria use. From anticipation use and anticipation dysphoria use it moves to relief-oriented beliefs and eventually to permissive beliefs. Permissive and control beliefs appear side by side and hence result in intra-psychic conflict. Permissive beliefs can be activated by various stimuli such as individuals, places and situations leading to cravings [7]. Here, CBT deals with all the belief categories: anticipatory, permissive and core beliefs by introducing or reinforcing better adaptive beliefs. CBT assists the patient to act based on more realistic thoughts with regard to their problem. Having restructured their thoughts, individuals start to take charge of problems and situations which were previously considered unbearable and made them abuse alcohol [7].

### **Literature Review**

Pashel, *et al.* conducted a randomized controlled trial to evaluate the effectiveness of relapse prevention cognitive model based on Marlatt treatment approach involving drug dependents. The research consisted of 92 participants divided into 46 control group and 46 for intervention group. The study period was two and half months and sessions were done weekly. Results showed that CBT was 63.6 percent effective in preventing relapse in patients with drug dependence. The study further revealed that education level was a factor in relapse prevention. Here, those with higher education were about three times less likely to relapse than those with less or no education level. The study considered education as a factor affecting the outcome of the intervention [32].

Shujun, *et al.* conducted a randomized trial in China to investigate the efficacy of cognitive behavioral therapy on opiate use and retention in methadone maintenance treatment. The study comprised of 240 opiate dependents in community based methadone maintenance treatment (MMT) clinics. The patients were randomly assigned to either standard MMT group as control group or to weekly CBT plus MMT Group as an intervention group. Each group had 120 patients. The program ran for 26 weeks. Results indicated that in comparison to standard MMT, CBT had a higher proportion of opiate-negative urine test at 12 weeks (59% against 69%  $p = 0.05$ ) and 26 weeks (63% against 73%  $p = 0.05$ ). Retention rates at 12 weeks were not different (73.3% against 74.3%  $p = 0.88$ ). At 26 weeks, it was 55.8% against 64.2%  $p = 0.19$ . CBT further showed higher decrease in Addiction Severity Index (ASI) employment score at 26 weeks and even more decrease in Perceived Stress Scale (PSS) at 12 and 26 weeks. The study therefore, concluded that CBT is efficacious in reducing opiate use, improving employment functioning and in decreasing stress levels for opiate dependents in MMT in China [40]. However, the sample was not culturally representative.

Niknejad and Farnam, conducted a stratified random experimental research. The aim of the study was to investigate the effectiveness of CBT in preventing relapse, increasing coping skills and motivations among self-reported individuals with opiate addiction in Zahedan, Iraq. A group of 40 drug addicts was divided in two. One group of 20 received (CBT) cognitive behavioral therapy while the other did not. The results revealed that the ratio of relapse of experimental group to control group was 4 to 13. In addition, the ratio of not having a relapse in the intervention group to control group was 16 to 7. Chi-square shows that,  $df = 1$ , ( $p < 0/0.5$ ,  $\chi^2 = 4.62$ ). After three months of treatment and follow-ups, it was concluded that CBT was effective for preventing relapse, increasing motivation and for coping skills development [31]. The study recruited only the self-reported individuals. These might have already made the decision to quit, since they were self-reported, and thus the outcome might not have been a result of CBT but other confounding factors.

Voshaar, *et al.* did a randomized controlled trial to evaluate the efficacy and feasibility of tapering off the long term diazepam and the value of adding group CBT. The study comprised of 180 participants and study duration of 3 months. The patients were either assigned to tapering group alone or to tapering group plus CBT. Conclusion was that CBT had a limited value in patients' discontinuing long term



diazepam than tapering [45]. The study employed group CBT and not individual CBT which might be an explanation for the poor impact of CBT.

Watt, *et al.* conducted a randomized controlled trial to find out if the application of CBT in patients with anxiety and alcohol dependency can reduce both anxiety and alcohol abuse. Results showed a marginally significant reduction of high consequence drinkers in the intervention group, that is high CBT group. This was measured by one tailed McNemar test ( $p=1/2.06$ ) but there were no significant reduction in low CBT and control group [47]. The research was not cultural representative and hence cannot be generalized to other cultural settings like Zambia.

Laura and Paul, *et al.* reported that among people with HIV (PLWH) in sub-Saharan Africa, harmful alcohol consumption and co-occurring mental health issues are very common (SSA). However, there are few evidence-based treatment options available in SSA HIV care settings that can address both harmful alcohol consumption and comorbidities. Recent research examining single-session alcohol brief interventions (BIs) among PLWH in SSA has indicated the need for more effective therapies. The Common Elements Treatment Approach (CETA), an evidence-based transdiagnostic multi-session psychotherapy, as compared to single session BI and produced good results. However the cost of training and lack of local expertise jeopardized the use of CETA at the grassroots level.

Petty, *et al.* carried out randomized controlled trial to investigate the efficacy of brief CBT alcohol intervention in helping military recruits reduce their unhealthy drinking by challenging thought processes and building up coping skills. The research comprised of 30 participants, 28 males and 2 females, randomly assigned either to intervention group or control group. The age ranges were not significantly differences between the two sexes. Sessions were delivered in four consecutive one and half hours per session. The results shows that the treatment group had significantly higher levels of motivation and reduced levels of binge drinking ( $p < 0.05$ ). Further, group-time interaction effect was statistically significant, that is,  $p < 0.05$ . Cultural perspectives were not taken into consideration, thus lacking generalizability [33].

Sheikh, *et al.* conducted a randomized controlled trial on the impact of brief intervention on patients with alcohol dependence. It was discovered that experimental group, those who received brief intervention had a higher average time to first relapse of 51.29 days while the control group had a lower time to first relapse of 10.00 days. He further indicated that the study had 30 relapses where 29 came from non-intervention group while only one relapse came from interventional group [41].

## Methodology

### Research design

The research employed randomized controlled trial (RCT). Christie, *et al.* (2011), postulated that RCT is a type of scientific experiment having the aim of reducing bias when testing a new treatment. RCT is designed to minimize bias in selection and by having different comparison groups. The researchers can determine any effects of treatment by comparing to the control group, while other variables are kept constant. RCT is a type of experiment that provides insight into cause and effect by establishing what happens when a particular factor is manipulated.

The approach used in this study was quantitative to help understand effects of CBT on patients with alcohol dependence. It was established by [28] that the use of quantitative research methods was adopted in order to ensure validity, reliability and objectivity to a study. The advantage of the quantitative approach is that its results are more comprehensive, well validated and substantiated [12].

### Study setting

The study setting was Chainama Hills College Hospital (CHCH). CHCH was suitable because it is the national referral centre for mental health related illnesses and receives the highest percentage of patients with alcohol dependence in Zambia.

### **Study population**

Study population can be described as a set of cases, objects or events of interest to the researcher; from which he or she wants to draw a sample [25]. Therefore, the target population of this study was 296 patients with alcohol dependence who attended Chainama Hills Hospital out-patient department (OPD) from June 2018 to September 2018. The age range was 18 to 65 years. Chainama Hospital was receiving an average of 74 patients per month with alcohol dependence [8].

### **Sample size**

Sample is a subset or group of subjects selected from the larger population and whose characteristics can be generalized to the entire population (Whyte, 2003). Using confidence interval 95%, 0.05 alpha and power of 1-beta (80%), the sample size was calculated at 50. Fifty patients were further divided into two groups having 25 patients in (CBT) intervention and 25 patients in the control groups.

### **Sampling procedure**

The study consisted of a total number of 50 patients who were divided into two groups of 25 patients in the intervention group and 25 patients in the control group. By means of random selection, patients were either assigned to intervention or control group using opaque envelope.

Participants were recruited after meeting the inclusion criteria. Recruitment procedure followed systematic sampling method where every third patient meeting inclusion criteria was recruited in the study.

Patients were assessed and assigned to the research by Chainama Psychiatrists, Consultants, the Clinical Psychologists and Clinical Neuropsychologists. Psychiatrists and Consultants did psychiatric assessment for alcohol dependence diagnosis by the use of DSM V criteria while Clinical Psychologists and Clinical Neuropsychologists administered (Alcohol Use Disorder Identification Test (AUDIT) for purposes of quantification of alcohol dependence.

After recruitment of 50 patients, probability sampling was employed to assign patients either to intervention group, those who received cognitive behavioral therapy or control group that did not receive cognitive behavioral therapy (CBT) but the conventional or standard treatment that Chainama Hospital offers to patients with alcohol dependence. This was achieved by putting 50 folded pieces of paper in an opaque envelope having half of them representing intervention (CBT) group by 'I' and the other half 'C' to represent control group. Thereafter, recruited patients were asked to pick a piece of paper from the envelope while blind-folded. The letter picked determined the group the patient belonged to.

### **Inclusion criteria**

The inclusion criteria comprised of patients who/with:

- a. Alcohol dependence, meeting the DSM V diagnostic criteria.
- b. Had no other significant psychiatric condition.
- c. Scored 20 and above on AUDIT.
- d. Aged between 18 and 65.
- e. Had close relative to give collateral information before and after the treatment or study.
- f. Had the capacity to give informed consent.



### **Exclusion criteria**

The exclusion criteria consisted of patients with alcohol dependence who:

- a. Had other mental disorders such as: psychotic conditions, dementia, depression, post-traumatic stress disorder, anxiety among others.
- b. Had cognitive impairment.
- c. Scored 20 and above on AUDIT.
- d. Who were under or above the age limit (between 18 and 65).
- e. Had no close relative to give collateral information before and after the treatment or study.
- f. Had no capacity to give informed consent.

### **Data collection tools**

Data collection tools included questionnaire and Alcohol Use Disorder Identification Test (AUDIT) which is a standardized assessment instrument for patients with alcohol disorders. The questionnaire was used to capture demographic data of patients. It consisted of the following demographic factors: residential area, age group, gender, marital status, education, household income and employment status. AUDIT was used for assessment and quantification of alcohol dependence. It is comprised of ten questions which assesses ten aspects of alcohol dependence as follows; 1. Frequency of drinking 2. Amount of drinks 3. Tolerance 4. Loss of control 5. Failure to do the expected 6. Wanting the drink first thing in the morning 7. Loss of memory 8. Guilty feelings 9. Physical harm 10. Concern from others about ones drinking. These were the alcohol dependence variables.

### **Study duration**

Recruitment of the research participants, intervention and reassessment was between 4 to 5 months.

### **Research procedure**

The procedure of research begun by recruitment of 50 research participants. Research participants were recruited after assessment by psychiatrists using DSM V criteria for alcohol dependence. The patients who met the DSM V criteria were referred to the Clinical Psychologists and Clinical Psychologists who further administered AUDIT to establish the level of dependence by means of ascertaining the alcohol dependence score. The patients who scored 20 and above were recruited into the study by means of systematic sampling where every third patient meeting the selection criteria of the score of 20 or above was recruited into the study. The overall AUDIT score for each client were computed and recorded. In addition, the score for the first three variables for AUDIT which are alcohol use variables were also compiled and recorded. The first three variables were the ones that were considered for comparing whether the client was abstaining or not. The patients were further assigned to either intervention (CBT) group or control group by means of simple random sampling where folded pieces of paper with either 'I' for intervention group or 'C' for control group were put in an opaque envelope and the patient, while blind folded had to pick a piece of paper. The letter on the piece of paper selected determined whether a particular patient belonged to either CBT or control group.

All the patients therefore received alcohol dependence assessment by Psychiatrist and using DSM V criteria as well as AUDIT assessment for alcohol dependence level by clinical Psychologists and Clinical Psychologists.

All the patients in both groups received the conventional treatment of alcohol dependence. Nonetheless, patients in intervention group received eight (8) weekly sessions of CBT in addition to conventional treatment while the control group did not receive CBT but the conventional treatment. CBT sessions were administered by Clinical Psychologists and Clinical Neuropsychologists.

The CBT parameters used were: case formulation, goal setting, identification of negative thoughts, thought recording, cognitive restructuring, behavior modification, behavior charting.

After eight weekly sessions, patients were assessed for alcohol abstinence by means of AUDIT. The scores of the first three variables of AUDIT before the study were compiled and compared to the score of the first three variables after the 8 weekly sessions by means of SPSS version 21.0.

### **Data management and storage**

Raw data collected was transformed into standardized scores and put in codes in order to allow analysis by SPSS Version 21.0. Furthermore, data collected was secured under lock and key.

### **Data analysis**

- Data was analyzed by the use of SPSS version 21.0 to find the central tendency, dispersion, frequency distribution among others.
- For the first objective which was to determine the differences in treatment outcome between CBT and non-CBT patients with alcohol dependence was analyzed by multi-variate analysis of variance (MANOVA).
- The second objective which was to evaluate the effect of demographic factors on control and CBT treatment outcomes in patients with alcohol dependence was analyzed by general regression analysis.
- The third objective which was to find out whether CBT had different effect on some alcohol dependence variables and not others was analyzed by MANOVA. The alcohol dependence variables were the first three variables in AUDIT scale which included: drinking frequency, amount of drinking and six or more drinks.

### **Ethical Considerations**

- Obtained the approval from Biomedical Research Ethics Committee of the University of Zambia to conduct research involving human participants.
- Obtained informed written consent prior to inclusion in the research.
- Participants had voluntary option to participate or withdraw from the study at any time without penalty.
- Anonymity was assured.
- Confidentiality was maintained.
- Results obtained were only to be used for academic purposes and improvement of clinical practice in psychological treatment of patients.
- The researcher did not interfere in selection of patients and institution standard treatment procedure.
- After discovering that CBT was effective in the treatment of patients with alcohol dependence, patients in the control group were also enrolled on CBT treatment.

## **Results**

### **Overview**

This chapter is a presentation of the study findings, that is, the effectiveness of cognitive behavioral therapy in treatment of patients with alcohol dependence. The specific objectives were (i) to determine the differences in treatment outcomes between CBT and non-CBT patients with alcohol dependence, (ii) to evaluate the effect of demographic factors on control and CBT treatment outcomes in patients with alcohol dependence, (iii) to find out whether CBT had more effect on some alcohol dependence variables and not others. The results presentation was objective specific.

The section began by presentation of descriptive statistics and further presented the effectiveness of CBT on alcohol dependence and thereafter the results of specific objectives.

### **Descriptive statistics**

#### **Background information**

The study consisted of 50 participants that were equally divided between CBT and non CBT group or control group. Results presentation was divided into three categories, that is, CBT group, non-group and the whole group.

Figure 1 below represent background statistical information.

#### **Gender**

The study as represented by figure 1 revealed that gender representation showed that 90 percent of the participants were males while only 10 percent were females in the whole sample. CBT group comprised of male participants as majority amounting to 92 percent while the minority of 8 percent were females. The control group showed that the majority of the participants were male about 88 percent and the minority were females of about 12 percent.

#### **Age**

Age category from the whole group showed that the majority of the participants fell into 24 - 29 age group with 32%, followed by 30 - 35 age group represented by 24%, 18 - 23 age group was the third highest with 18%, fourth highest was 36 - 41 age group with 16%, fifth was 42 - 47 age group with 6% and the least were 48 - 53 and 54 - 65 age groups with 2% each.

CBT group showed that the majority of the participants were 24 - 29 age group with 28%, followed by 18 - 23 age group with 24%, followed by 30-35 age group with 20%, fourth one was 36 - 41 age group with 16%, fifth was 42 to 47 age group with 8%, second lowest was 54 - 65 with 4% and the lowest was 48 - 53 represented by 0%.

Representation of control group were as follows: 24 - 29 age group presented the highest with 32%, 30 - 35 age group presented the second highest with 28%, third highest was 16% from 36 - 41 age group, which was followed by 18 - 23 age group with 12%, 42 - 47 and 48 - 53 age groups were represented by 4% each and there was nobody in 54 - 65 age groups, 0%.

#### **Marital status**

The whole study showed that the greatest number of participants were the singles who were represented by 58%, followed by married ones who were represented by 30%, those who were in separation group were 10% while the divorced were the minority with only 2%.

Treatment (CBT) group consisted of singles as majority, represented by 64% which was followed by 32% for the married ones. Those who were separated were 4% while none of the participants were divorced.

Control group was represented by the majority of singles who were 52%, married participants with 28%, the separated were represented by 16% while the divorced were the least with 4%.

#### **Residential area**

Residential area of the whole study was represented by 38% drawn from high density, followed by 36% from low density and the least came from medium density with 26%.

Treatment group showed that 36% of the participants came from high density area which was the same 36% for low density area and only 28% was occupied by the medium density participants.

Control group consisted of the majority from high density represented by 40%, seconded by low density with 36% and lastly 26% for medium density.

Gender	Treatment group		Control Group		
	Freq	Percent	Freq	Percent	Freq
Male	23	92	22	88	45
Female	2	8	3	12	5
<b>Age</b>					
18 - 23 years	6	24	3	12	9
24 - 29 years	7	28	9	36	16
30 - 35 years	5	20	7	28	12
36 - 41 years	4	16	4	16	8
42 - 47 years	2	8	1	4	3
48 - 53 years	0	0	1	4	1
54 - 65 years	1	4	0	0	1
<b>Marital Status</b>					
Single	16	64	13	52	29
Married	8	32	7	28	15
Separated	1	4	4	16	5
Divorced	0	0	1	4	1
<b>Residential Area</b>					
High density	9	36	10	40	19
Medium density	7	28	6	24	13
Low density	9	36	9	36	18
Total	25	50	25	50	50

**Table 1:** Showing background information.

**Education background**

The entire study revealed that the majority of the participants had attained tertiary level of education and were represented by 56%, while those that attained secondary education were the second highest represented by 36%. The least represented with only 8% had only went up to primary level.

For CBT group, the largest portion of participants were drawn from tertiary education with 56%, which was followed by secondary education level with 32% and lastly the primary level was the least with 12%.

Majority of participants in control group had attained tertiary education with 56%, while secondary level of education, having 36% was second and the least represented was participants with primary level of education with 8%.

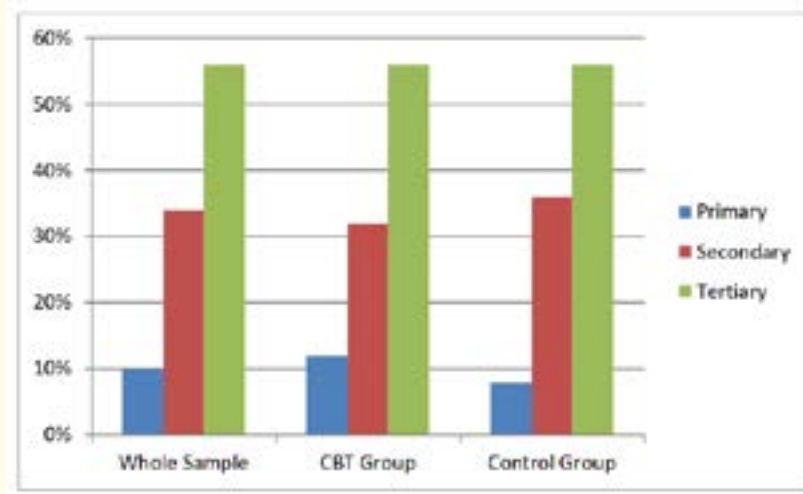


Figure 1: Showing education background.

### Employment status

The entire study comprised of 42% of self-employed, 32% formally employed and 28% unemployed. CBT group was represented by 52% self-employed, 32% unemployed and 16% formally employed. Control group comprised of 48% formally employed, 32% self-employed and 30% unemployed.

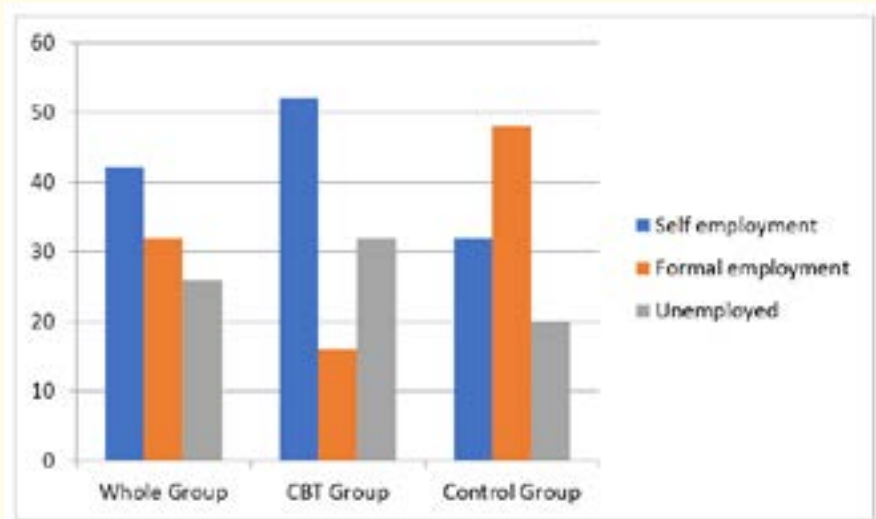


Figure 2: Showing employment status.

### Economic status

The study showed that half (50%) of the participants of the whole sample were earning below K1000, while those who earned between K1000 and K5000 were 36% and 14% were earning above K5000 of monthly income. The majority of CBT group of 72% were living below K1000 per month, 16% of the CBT participants earned between K1000 and K5000, and the minority of 12% were having a monthly income of above K5000. The majority of the participants in control group, 56%, were having below K1000, 32% had between K1000-K5000, while the minority, 12%, were having over K5000 monthly income.

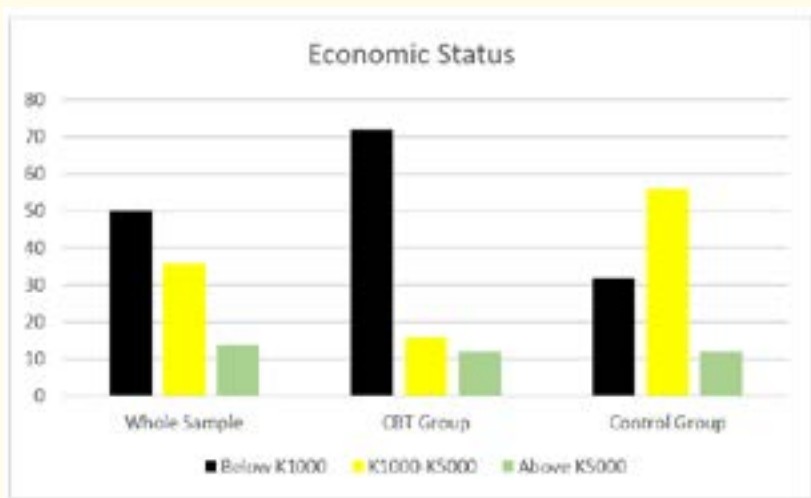


Figure 3: Showing economic status.

### The effect of CBT in treatment of patients with alcohol dependence

The aim of this study was to investigate the effectiveness of cognitive behavioral therapy in treatment of patients with alcohol dependence. To achieve this, the aim was broken down into three specific objectives as shown below. The first objective was to determine the differences in treatment outcomes between CBT and non-CBT patients with alcohol dependence and was analyzed by MANOVA. The second objective which was to evaluate the effect of demographic factors on CBT treatment outcome in patients with alcohol dependence was analyzed by general regression analysis. The third objective which was to find out whether CBT had different effects on some alcohol dependence variables and not others was analyzed by MANOVA.

### Differences in treatment outcomes between CBT and non-CBT patients with alcohol dependence

This objective was analyzed by MANOVA. A two way between-group MANOVA was done to statistically determine the differences in treatment outcomes between CBT and non-CBT patients with alcohol dependence. The effectiveness of CBT in treatment of client with alcohol dependence by establishing the differences in pretest and post test scores of alcohol dependence/abuse was assessed. The analysis produced both descriptive and inferential statistics in intervention and control groups. When the preliminary assumption test was conducted, there was no serious violation noted in normality, linearity, univariate, multivariate outlier, homogeneity, covariance matrices as well as multicollinearity. As shown in table 2 below, descriptive and inferential statistics were yielded. The descriptive results demon-



strated that CBT and control groups had equivalent means with a mean difference of 0.4 in the pretest but in the post test it was 7.4. The mean difference for within the group for pretest and post-test was high in CBT group, 9.3 but lower in the control group, 2.68.

MANOVA to determine the differences in treatment outcome between CBT and non-CBT patients with alcohol dependence was not statically significant in pretest,  $P > 0.05 = 0.23$ . However, the results showed statistical significance in post test data,  $P < 0.05 = 0.01$ . This means that the alternative hypothesis that cognitive behavioral therapy is more effective in promoting abstinence in patients with alcohol dependence than treatment as usual was supported by post test results and not by the pretest results. There was hence clear evidence that descriptive and inferential statistics proved that CBT resulted in greater reduction in alcohol dependence variables than control group results.

Test Level	Intervention (CBT) Group		Control Group		F	Sig.
	Mean	Std Error	Mean	Std Error		
Pretest	10.12	1.24	10.52	1.45	1.51	0.23
Post-test	0.8	1.12	7.84	3.34	21.87	0.01

**Table 2:** Showing MANOVA descriptive and inferential statistics for the effect of CBT in treatment of patients with alcohol dependence.

**Effect of demographic factors on control and CBT treatment outcomes in patients with alcohol dependence**

The second objective which was to evaluate the effect of demographic factors on control group and CBT treatment group outcomes in patients with alcohol dependence was analyzed by linear regression analysis. To achieve this objective, two parallel linear regression analysis were run to assess the predictive effect of demographic factors to bring about change or reduction in alcohol dependence levels. One linear regression analysis was performed on CBT group while the other was done on the control group. The demographic variables used include residential, age, gender, marital status, educational level, monthly income and employment.

The general linear regression model demonstrated in table 3 that demographic factors were neither statistically significant in CBT group data nor in the control group data. CBT data presented the following significance levels per demographic factor, residential; sig. = 0.45,  $P > 0.05$ , age; sig. = 0.3,  $P > 0.05$  gender; sig. = 0.48,  $P > 0.05$ , marital status; sig = 0.09,  $P > 0.05$ , educational level; sig = 0.51,  $P > 0.05$ , monthly income; sig. = 0.17 and employment; sig. = 0.09,  $P > 0.05$ . The overall predictive effect of demographic factors in CBT group was equal to 0.29,  $P > 0.05$ . Control group data as well showed that none of the demographic factors had the significant influence on the reduction of alcohol dependence variables as shown below. Residential; sig. = 0.07,  $P > 0.05$ , age; sig. = 0.13,  $P > 0.05$  gender; sig. = 0.90,  $P > 0.05$ , marital status; sig = 0.05,  $P > 0.05$ , educational level; sig = 0.22,  $P > 0.05$ , monthly income; sig. = 0.13 and employment; sig. = 0.70,  $P > 0.05$ . The overall statistical significance of demographic factors in the control group data was 0.38,  $P > 0.05$ . Furthermore, it also demonstrated that none of demographic factor affected the changes in the alcohol dependence variables. The implication of the results was that the reduction in the alcohol dependence variables was not influenced by any demographic factor but by the impact of CBT.

**To find out whether CBT had different effects on some alcohol dependence and not others**

A two way between-group MANOVA was done to statistically determine the effects of CBT on alcohol dependence variables by establishing the differences in pretest and post test scores of alcohol dependence. The variables were drinking frequency, amount of drinking and six or more drinks per drinking occasion. MANOVA analysis produced both descriptive statistics for intervention and control groups. When the preliminary assumption test was conducted, there was no serious violation that was noted in normality, linearity, univariate, multivariate outlier, homogeneity, covariance matrices as well as multicollinearity. MANOVA descriptive analysis as shown in table 4, demonstrated that the mean difference within group in control group (pretest and post-test groups) were minor in each of the alcohol

	Control Group					Treatment Group				
	B	Std. Error	Beta	t	Sig.	B	Std. Error	Beta	t	Sig.
Residential	-0.87	0.45	-0.68	-1.96	0.07	0.77	1.00	0.21	0.78	0.45
Age	-0.31	0.20	-0.46	-1.58	0.13	-.75	0.71	-0.28	-1.06	0.31
Gender	0.12	0.95	0.03	0.12	0.90	1.69	2.31	0.17	0.73	0.48
Marital Status	0.39	0.53	0.18	0.67	0.52	1.70	0.93	0.45	1.82	0.09
Education level	0.60	0.47	0.38	1.28	0.22	0.94	1.40	0.19	0.68	0.51
Monthly Income	0.8	0.50	0.51	1.61	0.13	1.79	1.23	0.35	1.45	0.17
Employment	0.13	0.33	0.11	0.39	0.70	2.35	0.90	0.51	2.60	0.09

Table 3: Showing the predictive effect of demographic factors on alcohol dependence.

dependence variables, that is, drinking frequency = 0.72, amount of drinking = 0.88 and six or more drinks = 1.0. Nonetheless, CBT group presented a wider within group mean variation between pretest and post-test, that is, drinking frequency = 3.48, amount of drinking = 2.76 and six or more drinks = 3.28. As demonstrated above, there was a huge within group mean differences in CBT group than in the control group. Therefore, CBT resulted in greater reduction in alcohol dependence variables than control group.

	Control Group		Intervention Group	
	Mean	Std Error	Mean	Std Error
Pretest Drinking Frequency	3.64	0.093	3.76	0.093
Pretest Amount of Drinking	3.40	0.171	2.96	0.171
Pretest Six or more drinks	3.40	0.109	3.44	0.109
Post-test Drinking Frequency	2.92	0.175	0.28	0.175
Post-test Amount of Drinks	2.52	0.174	0.20	0.174
Post-test Six or Drinks	2.40	0.186	0.16	0.186

Table 4: Showing the descriptive statistics of impact of CBT on the alcohol dependence variables.

**Inferential statistics showing the impact of CBT on alcohol dependence variables**

A two way between-group MANOVA was done to statistically investigate the predictive impact of CBT on alcohol dependence variables by establishing the differences in pretest and post test scores of alcohol dependence. The variables were drinking frequency, amount of drinking and six or more drinks per drinking occasion. MANOVA analysis produced inferential statistics for intervention and control groups. MANOVA pretest analysis revealed no statistical significance in all the alcohol dependence variables, that is, drinking frequency F 3.282, sig. = 0.08, P > 0.05, amount of drinking F 3.074, sig. = 0.09, P > 0.05 and six or more drinks F 0.664, sig. = 0.41, P > 0.05. The overall pretest inferential statistical analysis was not statistically significant, sig. 0.45, P > 0.05. However, MANOVA analysis in post test showed inferential statistical significance in all the alcohol dependence variables with the overall sig. 0.001, P > 0.05. Each of the variables was represented by statistical significance of 0.001. Thus, CBT presented statistical significance on each and every variable of alcohol dependence.

	F	df1	df2	Sig.
Pretest Drinking Frequency	3.282	1	48	0.076
Pretest Amount of Drinking	3.074	1	48	0.086
Pretest Six or more drinks	0.664	1	48	0.419
Post-test Drinking Frequency	21.87	1	48	0.001
Post-test Amount of Drinks	19.556	1	48	0.001
Post-test Six or Drinks	28.517	1	48	0.001

Table 5: Showing inferential statistics showing the impact of CBT on alcohol dependence variables.

## Discussion

### Overview

This chapter has been mandated to discuss the results of the study as presented in previous chapters. To achieve this, discussion layout was done according to the objectives starting with the aim of the study. The overall objective of the study was to investigate the effectiveness of cognitive behavioral therapy in treatment of patients with alcohol dependence. The first objective was to determine the differences in treatment outcomes between CBT and non-CBT patients with alcohol dependence. The second objective which was to evaluate the effect of demographic factors on CBT treatment outcome in patients with alcohol dependence. The third objective was to find out whether CBT had different effects on some alcohol dependence variables and not others. Adoption or rejection of the hypothesis was done in this chapter. The discussion also compared and contrasted the previous studies done by other researchers elsewhere. Having done so, conclusion was arrived at.

### Effect of cognitive behavioral therapy in treatment of patients with alcohol dependence

The above overall objective was further broken down into specific objectives as shown below.

### Differences in treatment outcomes between CBT and control group patients with alcohol dependence

The study revealed that the first object which was to determine the differences in treatment outcomes between CBT and non-CBT patients with alcohol dependence showed that there was more reduction in alcohol dependence in CBT group than in control group as represented by both descriptive and inferential statistics. The study proved that there was significant difference in treatment outcome between patients exposed to CBT treatment than those exposed to treatment as usual. The results were in consistent with the alternative hypothesis which stipulated that cognitive behavioral therapy is more effective in promoting abstinence in patients with alcohol dependence than treatment as usual. The research therefore implied that the alternative hypothesis was supported. Seeing that the clients who received CBT as opposed to treatment as usual presented remarkable change and improvement far more significant than their counterparts, it was therefore more beneficial for clients or patients that CBT should always be part of the treatment plan for patients with alcohol dependence.

The results of this study were in uniformity with Pashel., *et al.* who conducted a randomized controlled trial to evaluate the effectiveness of relapse prevention cognitive model based on Marlatt treatment approach involving drug dependents. They discovered that CBT was 63.6 percent more effective in preventing relapse in patients with drug dependence than treatment as usual [32].

The other study that supports the current research results is for Shujun., *et al.* who undertook a randomized controlled trial in China to investigate the efficacy of cognitive behavioral therapy on opiate use and retention in methadone maintenance treatment. Their results

indicated that in comparison to standard MMT, CBT had a higher proportion of opiate -negative urine test. The study therefore, concluded that CBT is efficacious in reducing opiate use, improving employment functioning and in decreasing stress levels for opiate dependents [40]. However, in this study employment functioning and stress levels for patients with dependence were not taken into account which may be the focus for further studies.

The study was also consistent with the research done by Niknejad and Farnam. Niknejad and Farnam did a stratified random experimental research. The aim of the study was to investigate the effectiveness of CBT in preventing relapse, increasing coping skills and motivations among self-reported individuals with opiate addiction in Zahedan, Iraq. The results revealed that the ratio of relapse of experimental group to control group was 4 to 13. In addition, the ratio of not having a relapse in the intervention group to control group was 16 to 7. Chi-square shows that,  $df = 1$ , ( $p < 0.5$ ,  $\chi^2 = 4.62$ ). After three months of treatment and follow-ups, it was concluded that CBT was effective for preventing relapse, increasing motivation and for coping skills development [31]. In like manner, this randomized controlled trial revealed that CBT was more effective than the control or standard treatment. However, unlike Niknejad and Farnam, the current research did not take into consideration the acquisition of coping skills and motivation which are very important in helping recovery from alcohol dependence and prevention of relapse. This would be worthy of considering in further research.

The current study was also consistent with Sheikh, *et al.* who conducted a randomized controlled trial on the impact of brief intervention on patients with alcohol dependence. They discovered that experimental group, those who received brief intervention had a higher average time to first relapse of 51.29 days while the control group had a lower time to first relapse of 10.00 days. They further indicated that the study had 30 relapses where 29 came from non-intervention group while only one relapse came from interventional group [41].

With regard to Beck and others' theoretical stand point, individuals that present with alcohol dependence have intermediate and core beliefs about low frustration tolerance threshold, hopelessness, helplessness, boredom and love. Intermediate beliefs, also known as addictive beliefs can form various belief schemes that includes anticipatory, relief-oriented, permissive and control beliefs. Anticipatory beliefs manifest when a person who is about to start to use alcohol makes statements such as "it is fine to drink". With continued use, anticipatory beliefs result into anticipation use and anticipation dysphoria use. From anticipation use and anticipation dysphoria use, it moves to relief-oriented beliefs and eventually to permissive beliefs. Permissive and control beliefs appear side by side and hence result in intra-psychic conflict. Permissive beliefs can be activated by various stimuli such as individuals, places and situations leading to cravings [7]. Here, CBT deals with all the belief categories: anticipatory, permissive and core beliefs by introducing or reinforcing better adaptive beliefs.

The results of this study are a confirmation of the theoretical framework according to Beck which stipulates that CBT assists the patient to act based on more realistic thoughts with regard to their problem. Having restructured their thoughts, individuals start to take charge of problems and situations which were previously considered unbearable and made them abuse alcohol [7].

In addition, this study was in line with Kamarzin, who argued that patients suffering from alcohol abuse have particular thinking styles which lead to continuation of their disorder and prevention of change. The thinking patterns are a consequence of beliefs related to expectations, permissions and general individual's beliefs on alcohol abuse [19]. These beliefs are concerned with thoughts and ideas about pleasure, problem solving, importance, and escape [7]. Thus, the application of CBT serves to address the different beliefs regarding alcohol use thus making one refrain from alcohol use.

The results of this study were also consistent with mental health Gap Action Program Intervention Guide (mhGAP-IG), which advocates that psychosocial interventions are very important in the treatment of alcohol dependence and relapse prevention [49]. CBT is a very potent and powerful therapeutic tool in treatment of patients with alcohol dependence because it focuses on psychological factors

and helps patients to restructure their thought processes, modify behavior and acquire relevant coping skills necessary to manage risky situations [31].

CBT is a short-term therapeutic approach aiming at helping patients with alcohol disorders on the basis of behavioral change through acquisition of skills and learning from experiences. CBT aims at equipping patients with alcohol dependence to have control over environmental factors, control how to interpret as well as to address stimuli in the environment seeing that in cognitive theories, cognitive processes are the main factors for behavior modification [7]. Therefore, when CBT was administered, patients in treatment group presented great reduction in alcohol dependence than control group because they acquired necessary coping mechanisms than their counterparts.

CBT strategies are based on the theory that in the development of maladaptive behavioral patterns like alcohol abuse and dependence, learning processes play a critical role. Individuals in CBT therefore learn to identify and correct problematic behaviors by applying a range of different skills that can be used to stop alcohol abuse and to address dependence. A central element of CBT is anticipating likely problems and enhancing patients' self-control by helping them explore the positive and negative consequences of continued alcohol use, self-monitoring to recognize cravings early, identify situations that might put one at risk for use and developing strategies for coping with cravings and avoiding those high-risk situations. Research indicates that the skills learned through cognitive-behavioral approaches remain after the completion of treatment. Behavioral approaches help to engage people in treatment, provide incentives for them to remain abstinent by modifying their attitudes and behaviors related to alcohol dependence and increase their life skills to handle stressful circumstances and environmental cues that may trigger intense craving for alcohol and another cycle of compulsive abuse (National Institute on Drug Abuse, 2012). Cognitive therapy is a psychotherapeutic system that attempts to reduce emotional reactions and dysfunctional behaviors through creating change in defective thinking and maladaptive beliefs that underlie emotional reactions. The main objective of CBT is to create change both in patient's actions and thoughts [42]. Application of CBT in this study made it possible for patients to abstain due to changes in behavior and thinking processes.

The randomized controlled trial research conducted by Watt, *et al.* to find out if the application of CBT in patients with anxiety and alcohol dependence could reduce both anxiety and alcohol abuse, on one hand supported this research but on the other hand it did not, seeing that it produced mixed results. Results showed that high CBT group was in consistent with this study presenting slightly significant reduction of high consequence drinkers in the intervention group, but the low CBT and control group displayed inconsistency with the current research [47]. Watt and others study incorporated anxiety which was not taken into consideration in this study. In this study, patients with another major primary disorders like anxiety, were in the exclusion criteria.

The results nonetheless contradicted the study done by Voshaar and others who after currying out a randomized controlled trial to evaluate the efficacy and feasibility of tapering off the long term diazepam and the value of adding group CBT, concluded that CBT had a limited value in patients' discontinuing long term diazepam abuse than tapering [45]. However, the study employed group CBT and not individual CBT which might be an explanation for the poor impact of CBT.

### **Effect of demographic factors on control and CBT treatment outcomes in patients with alcohol dependence**

The second objective was to evaluate the effect of demographic factors on control and CBT treatment groups outcomes in patients with alcohol dependence. The study comprised of eight demographic factors that included: residential, age, gender, marital status, education level, monthly income and employment. The study demonstrated that none of the demographic factors exerted statistically significant influence either on CBT group data or on the control group data. All the demographic factors had  $P > 0.05$ . The overall predictive effect of demographic factors in CBT group was equal to 0.29,  $P > 0.05$ . Control group data as well showed that none of the demographic factor had the significant influence on the alcohol dependence variables. The overall statistical significance of demographic factors in the control group data was 0.38,  $P > 0.05$ . Therefore, demographic factors did not in any significant manner influence any change in the control and

CBT group data outcome. The implication of the results therefore was that the reduction in the alcohol dependence variables was not influenced by the any demographic factor but by the impact of the application of CBT.

The results of this research study were consistent with Petty, *et al.* who undertook randomized controlled trial to investigate the efficacy of brief CBT in helping military recruits reduce their unhealthy drinking by challenging thought processes and building up coping skills [33]. In their study, the age ranges did not present significant differences between the two sexes. Therefore, any reduction in the unhealthy drinking was not as a consequence of age difference but the impact of CBT administration which challenged thought processes and brought about improvement and acquisition of coping mechanisms. With regard to Laidlaw CBT produces impact to all individuals regardless of their socioeconomic standing, cultural background, or race. The important thing is that the client should have sound state of mind and that the psychotherapist and the client can have a meaningful interaction in their therapeutic alliance.

The results were in line with the discoveries of Renee that gender does not have impact in the treatment of psychological disorders but the impact of CBT. Therefore, it matter less the gender of the participant as long as CBT is adequately applied, clients would register positive changes.

Despite the foregoing, Renee had a discovery that education has an effect on the CBT therapeutic out-comes [36]. In their study, it was established that clients with higher levels of education had improved more than those with poor education. Nonetheless, the outcome of Renee might not have been because of the inability of CBT to produce change but might have been due to the inability of the therapists to provide other alternative forms of instruction and assignments other than in written form. This is because mostly CBT assignments are done in writing while people with low education levels might not be able to accomplish such a task in written form. In the current study, alternative ways of accomplishing assignments were taken into consideration that is, orally to those who had a challenge of writing, though not many of them as most of the participants had meaningful levels of education and were able to write and speak English. Therefore, as long as instructions can be broken down and be given to a client in a way that they can understand and appreciate, it does not matter the level of education, CBT would produce positive and amazing results. One of the effects of CBT is raising the motivation for change in clients which is a major factor for positive change. Thus, when applied correctly, education level cannot be a factor to prevent motivation and later on reduction and stopping of alcohol dependence.

### **CBT effect on alcohol dependence variables**

The third objective was to find out whether CBT had different effects on some alcohol dependence variables and not others. The variables were drinking frequency, amount of drinking and six or more drinks per drinking occasion. The study showed that the mean difference within group in control group (pretest and post-test) were minor in each of the alcohol dependence variables, that is, drinking frequency = 0.72, amount of drinking = 0.88 and six or more drinks = 1.0. Nonetheless, CBT group presented a wider within group mean variation between pretest and post-test, that is, drinking frequency = 3.48, amount of drinking = 2.76 and six or more drinks = 3.28. As demonstrated above, there was a huge within group mean difference in CBT group than in the control group. Therefore, CBT resulted in greater reduction in all the alcohol dependence variables than the control group. Furthermore, this research showed the inferential statistical significance in all the alcohol dependence variables of  $P < 0.001$  in each and every alcohol dependence variable with the overall sig. 0.001,  $P < 0.05$ . Each of the variables was represented by statistical significance of 0.001. Thus, CBT presented statistical significance on each and every variable of alcohol dependence. Therefore, CBT exerts impact on frequency of drinking, amount of drinking and on tolerance.

In agreement with this study, Petty, *et al.* 2010 carried out randomized controlled trial to investigate the efficacy of brief CBT in helping military recruits reduce their unhealthy drinking by challenging thought processes and building up coping skills. The results shows that the treatment group had significantly higher levels of motivation and reduced levels of binge drinking ( $p < 0.05$ ).



The study was also consistent with mental health Gap Action Program Intervention Guide (mhGAP-IG), which points that psychosocial interventions are very important in the treatment of alcohol dependence and relapse prevention [49]. This study just proved that CBT, which is one of psychological intervention approaches, confirms that it has influence on drinking frequency, amount of drinks and more than six drinks per drinking occasion, that is, CBT produces massive reduction in alcohol dependence variables.

## **Conclusion**

This chapter is designed for conclusion and recommendation of the study regarding the aim and objectives of the study and future endeavors. The overall objective of the study was to investigate the effectiveness of cognitive behavioral therapy in treatment of patients with alcohol dependence. The first objective was to determine the differences in treatment outcome between CBT and non-CBT patients with alcohol dependence. The second objective which was to evaluate the effect of demographic factors on treatment outcome in patients with alcohol dependence. The third objective was to find out whether CBT had different effect on some alcohol dependence variables. Further, the study addressed the adoption or rejection of the hypothesis.

The study concluded that there was significant difference in treatment outcomes between patients exposed to CBT treatment and those exposed to treatment as usual. The research therefore concluded that the alternative hypothesis was supported. Seeing that the patients/clients who received CBT as opposed to treatment as usual presented remarkable change and improvement, more significantly than their counterparts, it was thus more beneficial to clients or patients that CBT should always be part of the treatment plan for patients with alcohol dependence. The study demonstrated that none of the demographic factors exerted statistically significant influence on CBT group data. Control group data as well showed that none of the demographic factor had the significant influence on the alcohol dependence variables. Therefore, demographic factors did not in any significant manner influence changes in the CBT or control group data outcomes. The implication of the results was that the reduction in the alcohol dependence variables was not significantly influenced by the any demographic factor but by the impact of the application of CBT. Furthermore, CBT group presented a wider within-group mean variation between pretest and post-test, that is, drinking frequency, amount of drinking and six or more drinks. There was a huge within group mean difference in CBT group than in the control group. Therefore, CBT resulted in greater reduction in all the alcohol dependence variables than the control group. Moreover, CBT presented statistical significance on each and every variable of alcohol dependence. Therefore, CBT exerts impact on frequency of drinking, amount of drinking and on tolerance.

## **Recommendations**

1. CBT should always be part of treatment of patients with alcohol dependence.
2. Mental health workers should be equipped with skills and knowledge in the application of CBT to effectively treat patients with alcohol dependence.
3. There should be refresher courses in CBT to the psychologist who work with patients with alcohol dependence.
4. Regular psychological assessment should be conducted in order to monitor progress and recovery.
5. Given the nature of CBT which is required to be applied at least once pay week, there is need for MOH and GRZ to employ more Psychologists, Clinical Psychologists and Clinical Neuropsychologists.
6. There is need for every hospital to have trained and quailed Psychologists who can administer CBT effectively and efficiently.

## **Research Recommendations**

1. Research should be conducted on the impact of CBT on relapse prevention in patients with alcohol dependence.
2. There should be a research on the effect of CBT on patients with comorbid conditions, that is, alcohol dependence and another mental condition.

3. A study should be conducted to investigate whether the effects of CBT varies with the dose.
4. The impact of CBT on patients with alcohol dependence as stand alone, without medication should be considered.
5. Another study of the effect of CBT comprised of Gestalt perceptual stimulant images should be considered.
6. To consider the study on the cognitive, behavioral and physiological coping skills acquired from CBT by patients with alcohol dependence.

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