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Differences in Retention Rates between Cocaine and Alcohol Dependent Individuals in a Drug-Free Setting

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DIFFERENCES IN RETENTION RATES BETWEEN COCAINE AND ALCOHOL DEPENDENT INDIVIDUALS IN A DRUG-FREE SETTING

by

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Substance abuse treatment outcome is an important area for clinical research. Furthermore, it is important to identify sub-populations which may require additional treatment services in order to improve outcome. Cocaine dependent individuals have been identified as a group that provides many challenges to clinicians and researchers due to the high incidence of relapse. The current study explored the differences in treatment retention between persons diagnosed with either cocaine or alcohol dependence. There was a significant difference between the length of stay for the two groups ($p=.003$). However, there was not a significant difference in type of discharge between the two groups. Results are discussed with respect to findings reported in the literature. Recommendations for treatment planning are considered.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Substance Abuse Treatment and Outcome

Substance abuse is a nationwide problem that affects many individuals. Complaints regarding low success rates are common among the general public and in the treatment field. In order to improve outcome, it is necessary to examine the general nature of substance abuse and dependence disorders, their treatment and, more specifically, what is associated with positive results of treatment.

When a person begins to abuse substances and addictive behaviors become progressively worse, there are many negative consequences. The destructive nature of addiction permeates several domains of a person's life. Prolonged drug use can create problems in medical, interpersonal, legal, financial, occupational and recreational areas (American Psychiatric Association, 1994). In order to prevent further problems or remedy those that have occurred, it is necessary to interrupt the cycle of compulsive drug use and introduce life-style changes.

The most proactive way of interrupting the addictive cycle is to engage substance abusing individuals in treatment and rehabilitation. Treatment centers that specialize in arresting the progression of addictive behaviors may be useful in

initiating long-term abstinence from substance use and sustained recovery from the physical and psychological impairment of substance abuse. Due to the destructive and radiating nature of the disorder, it is crucial to understand what constitutes effective treatment for substance abusers.

One major factor in determining positive outcome for substance abusers is treatment retention and length of contact with treatment providers (Aron & Daily, 1976, cited in Stark, 1992; Baekelund & Lundwall, 1975; Ball, Lange, Myers & Friedman, 1988; Berger & Smith, 1978; Perkins & Bloch, 1971, cited in Stark, 1992; Raynes, Patch & Fisch, 1972, cited in Stark, 1992; Stark, 1992). Stark (1992) described treatment dropouts as having poorer outcomes than those who remain in treatment for longer periods of time. He stated that not only does the individual suffer negative consequences from premature termination of treatment, there is financial strain placed on the facility and insurance companies.

Stark (1992) reviewed the outcome literature on the differences between substance abuse treatment and general psychotherapy. Compared with substance abuse treatment, he reported more improvement in the early sessions of psychotherapy. Therefore, when a client does drop out of psychotherapy, more benefits are likely to have been attained than in the case of substance abuse treatment. On the other hand, for substance abuse treatment, there is a significant association between early dropout and negative outcome (Stark, 1992). Baekelund and Lundwall (1975) found that alcohol dependent individuals who drop out of treatment prior to maintaining 6 months of sobriety are unlikely to maintain

treatment objectives. Other studies have been shown similar results for drug dependent individuals (Aron & Daily, 1976, cited in Stark, 1992; Ball et al., 1988; Berger & Smith, 1978; DeLeon & Andrews, 1978, cited in Stark, 1992; Holland, 1978; Perkins & Bloch, 1971, cited in Stark, 1992; Raynes et al., 1972, cited in Stark, 1992). These studies indicated that favorable results were found for individuals who completed detoxification and became involved in a therapeutic community or methadone maintenance treatment. The clients were more likely to have maintained the following gains: remained drug and alcohol free, fewer arrests, lower unemployment, cessation of intravenous (IV) drug use and lower relapse rates than clients who dropped out of treatment. The studies lend strong support to the clinical observation that length of time in treatment is an important predictor of treatment outcome.

Cocaine Dependent Individuals as a Sub-Population

Coupled with the need to improve retention rates, it is important to identify sub-populations of substance abusers that may be at higher risk for early dropout from treatment. The cocaine "epidemic", which was first recognized in the late 1970s, has posed a significant challenge to researchers and practitioners in the substance abuse field (Washton & Stone-Washton, 1990). In recent years, the number of cocaine and crack cocaine dependent individuals has created significant demands on treatment facilities. The combination of following factors indicate the necessity of improving treatment for this sub-population of substance

abusers. First, there are increasing numbers of cocaine dependent individuals who are admitted to treatment. Second, cocaine dependent individuals have a high relapse rate.

Washton and Stone-Washton (1990) describe frustrations that treatment programs have faced regarding effective treatment for cocaine dependent individuals. They stated that the high incidence of relapse indicates that low success rates are common with cocaine dependence. They explored differences between two major subgroups of substance abusers, alcohol and cocaine dependent individuals. They highlighted several important clinical differences which may impact the effectiveness of treating cocaine dependent clients in the same treatment groups and therapeutic communities as alcohol dependent individuals.

First, differences between the two drugs are pertinent. Although, their effects on the brain may be very similar, alcohol is a central nervous system (CNS) depressant, whereas cocaine stimulates the CNS. Cocaine dependence is typically associated with polysubstance abuse. For example, cocaine dependent persons may use alcohol and other drugs to modify the stimulant effects of cocaine. Furthermore, alcohol does not provide the chemically based mood changes that are sought in cocaine dependence. At first, it may appear that cocaine dependent individuals should still be able to use alcohol without significant probability of relapsing with cocaine. However, studies based on subjective reports of drug effects, animal conditioning and dopamine pathways in the brain may provide information to the contrary (Wise, 1988).

The second difference purported by Washton and Stone-Washton (1990) is based on the conditioning properties of cocaine as compared to alcohol. The rapidity and strength of conditioning with cocaine-use stimuli is of greater magnitude than that of any other substance (Washton & Stone-Washton, 1990). Therefore, there is much stronger conditioning of exteroceptive cues associated with cocaine use than with cues associated with alcohol use. Several people, environments, feelings and experiences may be conditioned cues which motive drug use. Therefore, the stimulus conditions may have a much more significant impact on relapse rates for the cocaine dependent person than for individuals using other drugs.

Third, a significant degree of sexual compulsivity is characteristic of cocaine dependent persons. A high degree of sexual activity and sexual acting out behavior have been correlated with use of cocaine (Washton, 1989). Due to the strong relationship between sexual behavior and cocaine use, if sexuality is not discussed as a possible cue for drug use, relapse may occur.

Fourth, cocaine use is less likely to be detected by individuals in the user's environment. When a person is using alcohol, there is an associated odor and noticeable psychomotor disturbances. However, the cocaine user shows less observable signs of use.

Fifth, cocaine does not result in as severe withdrawal symptoms, medical problems and mortality rates as alcohol. Very few cocaine users are referred to treatment as a result of medical complications (Washton, 1989). In comparison,

alcohol has very detrimental physical effects and withdrawal symptoms when used over long periods. A significantly greater amount of reported accidents and injuries can be attributed to using alcohol than cocaine. The dangers that stem from cocaine use are based on its extreme addictive qualities and potential to change brain functioning and behavior (Washton & Stone-Washton, 1990).

Sixth, cocaine is not a legalized substance and the cocaine dependent individual is more likely to be viewed as a social deviant who is responsible for the addictive behavior (Washton & Stone-Washton, 1990). Due to the covert and illegal activities associated with obtaining and using cocaine, the cocaine dependent client may be more likely to manipulative, dishonest and non-compliant than alcohol dependent individuals. Therefore, therapists may face the frustrating challenge of addressing the above characteristics of a cocaine dependent individual in a therapeutic manner.

Seventh, the addictive potential of cocaine is much greater and rapidly progressive than that of alcohol. Washton (1989) described the families of people addicted to cocaine as being suddenly struck with the trauma associated with the member's drug use. Families of alcohol dependent people typically have more ingrained, maladaptive patterns of interacting due to the slow and gradually progressive nature of alcohol dependence.

Eighth, the subjective physical improvement is more rapid with cocaine dependence. Therefore, motivation to remain involved in rehabilitation may decrease more quickly than for the alcohol dependent person who requires much

more time to reach a state of physical well-being (Washton & Stone-Washton, 1990).

Finally, detoxification of the cocaine dependent person does not mandate intensive medical monitoring or medication to deal with withdrawal symptoms (Washton & Stone-Washton, 1990). The Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV; American Psychiatric Press, 1994) uses the following criteria for alcohol withdrawal: automonic hyperactivity, increased hand tremor, insomnia, nausea/vomiting, hallucinations/illusions, psychomotor agitation, anxiety and grand mal seizures. In contrast, following cessation of cocaine use, there is a dysphoric mood which may consist of fatigue, unpleasant dreams, insomnia/hypersomnia, increased appetite and psychomotor retardation or agitation (American Psychiatric Press, 1994). Therefore, due to the absence of medical complications, cocaine dependent persons may be admitted to less intensive methods of treatment (Washton & Stone-Washton, 1990). Rehabilitation of the cocaine user focuses primarily on cognitive distortions, behavior, motivation and improvement of lifestyle rather than managing physical withdrawal.

The proposed difference between cocaine and alcohol dependent individuals provides a substantial area for research. Washton and Stone-Washton (1990) proposed that cocaine dependent individuals do not need to be treated completely separate from other substance abusers. However, if these differences negatively impact individuals addicted to cocaine who are in treatment with a predominantly alcohol dependent population of clients, specialty tracks or programs

may be necessary to improve treatment outcome for cocaine dependence (Washton & Stone-Washton, 1990). Changes may need to be made in treatment protocols and programming if cocaine dependent individuals are at greater risk for dropout and relapse.

Most of the observations by Washton and Stone-Washton (1990) are based on clinical observations and experience. On an empirical level, Manu, Burleson and Kranzler (1994) conducted a study which indicated that current use of cocaine or heroin was more likely to predict early or premature discharge from an inpatient substance abuse unit in a general hospital. Before specialty programs or tracks are developed in treatment centers to address the special needs of cocaine dependent individuals, it is necessary to subject Washton and Stone-Washton's (1990) clinical observations to empirical analysis. Therefore, the current study will consider the following research question: Is there a significant difference in treatment retention between cocaine and alcohol dependent individuals?

CHAPTER II

REVIEW OF RELATED LITERATURE

Following is a review of the literature associated with treatment retention of substance abusers in general and with a specific focus on cocaine and alcohol dependence. The review is necessary for determining the dependent and independent variables. The following questions will be considered throughout the review: How is retention defined and measured in the substance abuse literature? What client variables are associated with treatment retention in substance abuse?

Definition of Retention

In the literature, the two main definitions of retention are: (1) the length of time the individual has been involved with treatment and (2) the type of discharge. The words, completion and retention, are used synonymously in studies, as are dropout, attrition and non-completer.

Several studies have looked at the length of time subjects attended sessions (Agosti, Nunes, Stewart & Quitkin, 1991; Brizer, Maslansky & Galanter, 1990; Carroll, Rounsaville & Gawain, 1991; Condelli & Dunteman, 1993; Gainey et al., 1993; Gawain et al., 1989; Joe, Singh, Garland, Lehman & Sells, 1983, Kang et al., 1991; Kleinman et al., 1992; Means et al., 1989; Siddall & Conway, 1988; Steer, 1983, cited in Stark, 1992). The definitions of length of time were

measured using two main criteria.

First, some researchers operationalized length of time in treatment by specifying a certain number of sessions a person had to attend in order to be considered as having completed treatment (Agosti et al., 1991; Brizer et al., 1990; Carroll et al.; Gawain et al., 1991). Attendance of at least nine sessions was required by Brizer et al. (1990) and Carroll et al. (1991, cited in Gainey et al., 1993). Four sessions were required for subjects in the study by Agosti et al. (1991). Gawain et al. (1989) used a cutoff of attendance at six weeks to define subjects as having successful retention rates. However, the more common method of measuring length of time in treatment was simply to record the actual number of days a person had attended (Condelli & Dunteman, 1993; Kang et al., 1991; Kleinman et al., 1992; Steer, 1983, cited in Stark, 1992).

The second method of defining completion of treatment has been to consider the type of discharge received (e.g., with staff approval, without staff approval, etc.). Joe et al. (1983) and Steer (1993, cited in Stark, 1992) used discharge type as an adjunct to measuring the number of days a person received treatment. Siddall and Conway (1988) used type of discharge to rank order the degree of success in treatment.

Predictor Variables

Upon reviewing the literature, it is evident that several variables have been examined repeatedly. Despite numerous studies, the results have been somewhat

inconsistent and have yet to provide a realistic picture of who is more likely to complete treatment. The inconsistencies may be due to methodological problems of previous studies and intercorrelation of the variables explored.

Age

Age has been a common variable used in predicting retention. Results have shown that older subjects are more likely to complete treatment, whereas younger subjects tend to drop out (Gainey et al., 1993; Joe et al., 1982; Manu et al., 1994; Sorenson, Gibson, Bernal & Deitch, 1985). Gainey et al. (1993) stated that age was the only strong predictor of retention in their study. Baekeland and Lundwall (1975) hypothesized that younger subjects may be less likely to have relations with family and community which help provide stability while going through treatment. Garfield (1986) stated that younger substance abusers may have a greater degree of impulsivity, autonomy and increased magnitude of substance use. These factors may increase the likelihood of younger subjects dropping out of treatment.

On the other hand, nonsignificant results have been reported when age was considered as a predictor (Aron & Daily, 1976, cited in Stark, 1992; McFarlain, Cohen, Yoder & Guidry, 1977, cited in Stark, 1992; Robinson & Little, 1982; Stark & Campbell, 1988, cited in Stark, 1992; Steer, 1983, cited in Stark, 1992).

Thus, the inconsistent results associated with age as a predictor of retention may be due to the likelihood that age intercorrelates with other important

variables, such as marital status, social support (Joe et al., 1983) or substance use history (Stark, 1992).

Gender

Conflicting results have been reported in the literature when gender has been used as a predictor. Mammo and Weinbaum (1993) found that female alcoholics are more likely to drop out of treatment early. Manu et al. (1994) reported that women are more likely to be irregularly discharged (i.e., leaving earlier than planned) than men. Brizer et al. (1990) conducted a study on individuals mandated to receive treatment for alcoholism by a public assistance agency. They found that men were more likely than women to attend at least nine sessions. Baekeland and Lundwall's (1975) literature review reported that in approximately forty-five percent of the studies women were less likely to be retained.

Equivocal results between men and women have been reported by Gainey et al. (1993) and Garfield (1986). Gender was nonsignificant in cocaine dependent individuals in an outpatient setting (Gainey et al., 1993) in methadone maintenance, and in alcohol and polydrug abusing outpatient clients (Garfield, 1986). For example, men were found to be more likely to drop out from treatment in outpatient levels of care for cocaine dependence (Agosti et al., 1991). However, the exclusion criteria in the study may have been too strict to generalize the results to the general population of outpatient cocaine dependent individuals.

The differences reported in the literature when considering gender as a

predictor may be conflicting due to interaction with other variables. Stark (1992) hypothesized that gender may have a complex relationship with social and personality factors, modality of treatment and dropping out. Beckman and Bardsley (1986) asserted that treatment centers may not meet special considerations of women due to the majority of clients being male.

Race

Mixed results have also been evidenced when race is considered as a predictor of retention. Kleinman et al. (1992) and Agosti et al. (1991) found that caucasian subjects are more likely to be retained than minorities in outpatient cocaine treatment. Condelli and Dunteman (1993) reported that caucasian subjects are more likely to complete treatment in a therapeutic community. Steer (1983, cited in Stark, 1992) also found caucasian subjects to have greater rates of retention in drug-free counseling. On the other hand, several studies have reported equivocal results when considering race in retention rates of alcohol dependent subjects (Brizer et al., 1990; Castaneda, Lifshutz, Galanter, Medalia & Franco, 1992; Mammo & Weinbaum, 1993). Nonsignificant results were also found in a residential drug treatment center (Siddall & Conway, 1988).

Conflicting results may be due to factors that confound the measurement of race. Garfield (1986) stated that social and economic variables may be related to race. Stark (1992) included therapist attitude as a confounding variable. If these factors are not considered in the data analysis, they may have an

indeterminant effect on the results.

Education

A few studies have found a positive relationship between education level and retention (Federer, McHenry & Howard, 1986, cited in Siddall, 1988; Manu et al., 1994; Means et al., 1989). However, nonsignificant results were found in several studies (Agosti et al., 1991; Kleinman et al., 1992; Gainey et al., 1993).

One problem associated with using education as a predictor is the possible interaction between several variables that combine under the broader heading of socioeconomic status (SES). Along with education, income and employment may combine to facilitate the process of obtaining and remaining in treatment (Stark, 1992).

Employment

Conflicting findings are reported in the literature when considering employment as a predictor variable. Beckman and Beardsley (1986) found increased retention rates for alcohol dependent subjects who had higher income levels, were insured and treated in a private setting. Mammo and Weinbaum (1993) found unskilled workers more likely to drop out of treatment. Siddall and Conway (1988) found that individuals engaged in residential treatment were more likely to complete treatment if they were employed when discharged.

Several authors have indicated that employment may have a negative

impact on treatment retention (Stark & Campbell, 1988, cited in Stark, 1992; Steer & Kotzker, 1978, cited in Stark, 1992). Furthermore, Gainey et al. (1993) and Agosti et al. (1991) found no relationship between employment and retention.

As with education, employment and insurance coverage may be related to the more general category of SES. Therefore, it is crucial to determine the degree of interrelatedness of predictors related to SES.

Substance Use

Strong evidence of the relationship between substance use and retention is reported in the literature. Mammo and Weinbaum (1993) found that alcohol dependent persons who have maintained drinking behaviors during outpatient treatment were more likely to drop out of treatment than those who have abstained. Beck, Shekim, Fraps, Borgmeyer & Whitt (1983, cited in Stark, 1992) found that if individuals were intoxicated during admission there was a greater likelihood of Against Medical Advice (AMA) discharge. Means et al. (1989) found a positive relationship between retention and the length of abstinence from cocaine before admission. Gainey et al. (1993) found that cocaine dependent individuals treated on an outpatient basis were more likely to drop out if they were using multiple substances. Unexpectedly, Gainey et al. (1993), Brown, Watters, Inglehart & Akins (1982/1983, cited in Stark, 1992) and Joe et al. (1982) found that a shorter history of drug use was associated with an increase in the likelihood of dropping out. Thus, individuals with longer histories of drug use are

more likely to be retained in treatment. Stark (1992) states that the relationship between length of drug use history may be confounded with age.

Prior Treatment History

The importance of considering episodes of prior treatment may be due to the possibility of interrelation with variables such as age, length and severity of substance use (Stark, 1992) and availability of treatment due to insurance coverage. Agosti et al. (1991) found a nonsignificant relationship between previous substance abuse treatment and completion.

In order to assess the importance of prior treatment history, it is necessary to determine if prior treatment history intercorrelates with other predictor variables. These other variables may include age, length and severity of substance use (Stark, 1992) and accessibility of treatment due to insurance coverage.

Criminality and Legal Pressure

A substantial proportion of drug abusing individuals become involved in illegal activities and the legal system. Research that considers legal pressure in relation to treatment outcome has shown a positive relationship with treatment retention. Gainey et al. (1993) report the number of individuals with legal pressure who were retained in treatment was double the number who were retained without having legal pressure. Siddall and Conway (1988) found that successful completion of treatment in a residential setting could be predicted by

involvement with the legal system. Research that considers legal pressure in relation to treatment outcome has shown a positive relationship with treatment retention. Gainey et al. (1993) report the number of individuals with legal pressure who were retained in treatment was double the number who were retained without having legal pressure. Siddall and Conway (1988) found that successful completion of treatment in a residential setting could be predicted by involvement with the legal system. McFarlain et al. (1977, cited in Stark, 1992) and Stark and Campbell (1988, cited in Stark, 1992) found that attendance rates in the first thirty days of treatment were positively related to court mandates to receive treatment. In short, the rate of retention may be increased by involvement in the criminal justice system. However, it is important to consider the caution proposed by Gainey et al. (1993). These authors state that although retention rates may improve with legal involvement, actual drug use may be unaffected.

Social Support

Social support has been found to have a positive association with treatment retention (Gainy et al., 1993; Siddall & Conway, 1988). Gainey et al. (1993) reported that individuals living alone were three times less likely to be retained in treatment. The authors also reported that the use of self-help groups, such as Narcotics Anonymous (NA), Alcoholics Anonymous (AA) and Cocaine Anonymous (CA), is predictive of retention. Siddall and Conway (1988) reported

a significant relationship between treatment completion and social support as defined by family participation or development of social support.

Current Study

The current study was conducted to determine the differences in retention rates between cocaine and alcohol dependent diagnosed individuals. Previous methodological limitations were addressed by considering the intercorrelation of predictor variables and by using more powerful statistical analyses than previous studies have used.

Most studies on determining retention in the cocaine dependent population are conducted in outpatient settings (Agosti et al., 1991; Kleinman et al., 1992; Gainey et al., 1993; Carroll et al., 1991, cited in Gainey et al., 1993; Gawain et al., 1989; Means et al., 1989). The current study will be based on clients beginning at an inpatient level of care.

CHAPTER III

DESIGN AND METHODOLOGY

Setting

Gateway Villa is a nonprofit substance abuse treatment center in Kalamazoo, Michigan. The facility's staff is comprised of multidisciplinary professionals and paraprofessionals. There is a wide continuum of care offered at the facility, including detoxification, inpatient/residential, intensive outpatient (IOP), day treatment (DTX) and continuing care (CC).

Participants

Data was collected from a chart review of consecutive admissions to Gateway Villa's inpatient substance abuse treatment program from 1990 through 1992. The chosen time frame will be used to eliminate bias due to the principal investigator's employment at the facility that began in June, 1993. All research assistants have been in employment positions not associated with collecting client information during the aforementioned admission period.

Subjects had a primary diagnosis of either Cocaine Dependence or Alcohol Dependence using the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R criteria; American Psychiatric Association,

1987). The diagnosis is be found on the Initial Assessment form (see Appendix A) or the Michigan Department of Public Health Office of Substance Abuse Services-Data System (see Appendix B). They will have been admitted to the Detoxification Unit and then transferred to the Residential program. The sample met geographical criteria in order to ensure all subjects in the study had equal opportunity to complete the continuum of care. Subjects living in the following communities were included in the study: Kalamazoo, Parchment, Portage and Richland. Therefore, subjects living too far to continue in IOP or outpatient levels of care were eliminated. Every third subject who met criteria was selected for data collection.

Informed consent was not necessary for two reasons. First, all data were collected anonymously, and could not be associated with a particular client. Second, the primary investigator, faculty supervisor and research assistants have access to confidential information due to employment at the facility.

Measures

Two dependent measures were obtained. First, the total number of sessions in treatment, including transitions to less intensive forms of treatment (Day Treatment, IOP and CC), was calculated. That is, length of treatment was determined by counting the consecutive number of sessions the client attended in the continuum of care, including Detoxification, Residential and in the less intensive forms of treatment (Day Treatment, IOP and CC). For example, measures

continued as a client completed Detoxification and Residential and transferred to Day Treatment, Intensive Outpatient (IOP) or Continuing Care.

The second dependent measure consisted of nominally coding the type of discharge [Approved=1; Against Staff Advice (ASA)/Against Medical Advice (AMA)=2; Mutual (Mut)=3; Code of Conduct (COC)=4]. Discharges that are Approved refer to those clients who the staff judge to be therapeutically ready to terminate or transfer to a less intense level of treatment. ASA and AMA discharges are given to those clients who decide to leave treatment without staff approval. Discharges that are mutual are based on asking the client to leave due to non-compliance with treatment requests. COC discharges are given to a client who has exhibited extreme non-compliance or has violated program rules (i.e., positive drug screens, disclosure of drug use while in treatment, threatening or harming a peer or staff, etc.).

Independent measures included a total of twelve predictor variables collected from the Michigan Department of Public Health office of Substance Abuse Services-Data System form (see Appendix B). Variables of interest are included in the following alphabetical list: age at admission, age at first use, arrest history, education, employment status, gender (sex), insurance coverage, legal status, marital status, prior substance abuse treatment, race, and route of administration. Age at admission will be determined by subtracting the birthdate from the date of admission.

Procedures

Each file, from 1990 through 1992, was reviewed. In an effort to systematically randomize subject selection, data was collected from every third file diagnosed with either cocaine or alcohol dependence which also met the criteria for selection. Thirty percent of the subjects were randomly selected for reliability estimates. The person who did the reliability checks was independent of the person(s) collecting original data.

CHAPTER IV

ANALYSIS

Population Characteristics

Descriptive statistics were computed on the total sample of participants and for each subgroup of cocaine or alcohol dependent subjects. Means were computed for age, number of years of education, number of prior treatment episodes, number of arrests in last five years and age at first use. Percentages were figured for insurance coverage, gender, race, current employment, legal involvement, route of administration and marital status.

Reliability

Reliability of the data was determined by random data checks on thirty percent of the participants. Each subject had fourteen possible data points due to the combination of two dependent variables and twelve independent variables. The cumulative number of consistent data entries was divided by the total data points and multiplied by 100 to obtain the percent reliability.

Correlation Matrix

An intercorrelational matrix was formed correlating all possible pairs of the

sociodemographic variables and dependent measures. The analysis helped delineate possible relationships between the variables. It also provided the basis for determining which variables to use as covariates in the analysis of covariance (ANCOVA). In order to decrease the probability of Type I error in the family of tests, the Bonferroni procedure was utilized. Any correlation between a sociodemographic variable and one of the two dependent measures that is above the critical value of r was used as covariates in the ANCOVA. The critical value of r was be determined by the following formula: $r = F/N-2+F$. F is a critical value based on an alpha level, number of correlations and number of subjects.

Analysis of Covariance

An ANCOVA was computed in order to determine if there is a difference in retention between cocaine and alcohol dependent individuals with respect to the number of sessions in treatment. Any of the eleven sociodemographic variables which were statistically significant were used as covariates. The length of stay (sessions in treatment) was the dependent variable for the ANCOVA. The analysis addressed the following question: what would the difference between groups be if all subjects started with the same grand covariate mean on each covariate? Therefore, ANCOVA was used in order to remove excess variability due to the covariates. Furthermore, the error term will be smaller and the power of the analysis will be greater from using an ANCOVA rather than using an ANCOVA.

Chi Square

A Chi Square analysis was used to determine if there was a difference between alcohol and cocaine dependent individuals in regard to type of discharge. The Chi Square is able to determine if the observed number of subjects in each cell is equal to or exceeds the expected value. If the observed number of subjects is less than the expected number of subjects, the data will be collapsed in order to meet the assumptions of the Chi Square analysis.

CHAPTER V

RESULTS

Population Characteristics

Descriptive statisitics were computed in order to describe the entire subject population (N=348). The two subgroups, alcohol and cocaine dependent individuals, were also compared based on descriptive statisitics. Graphs of the raw data were constructed in a box plot and histogram (see Figures 1 & 2).

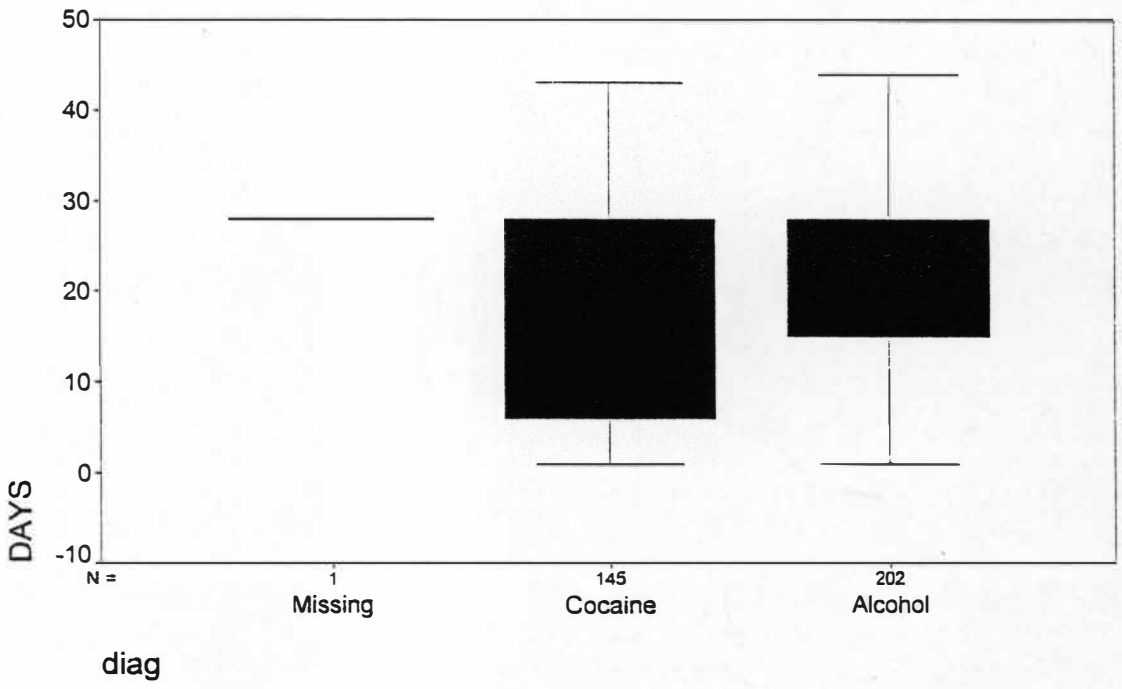

Figure 1. Boxplot of Sessions of Treatment.

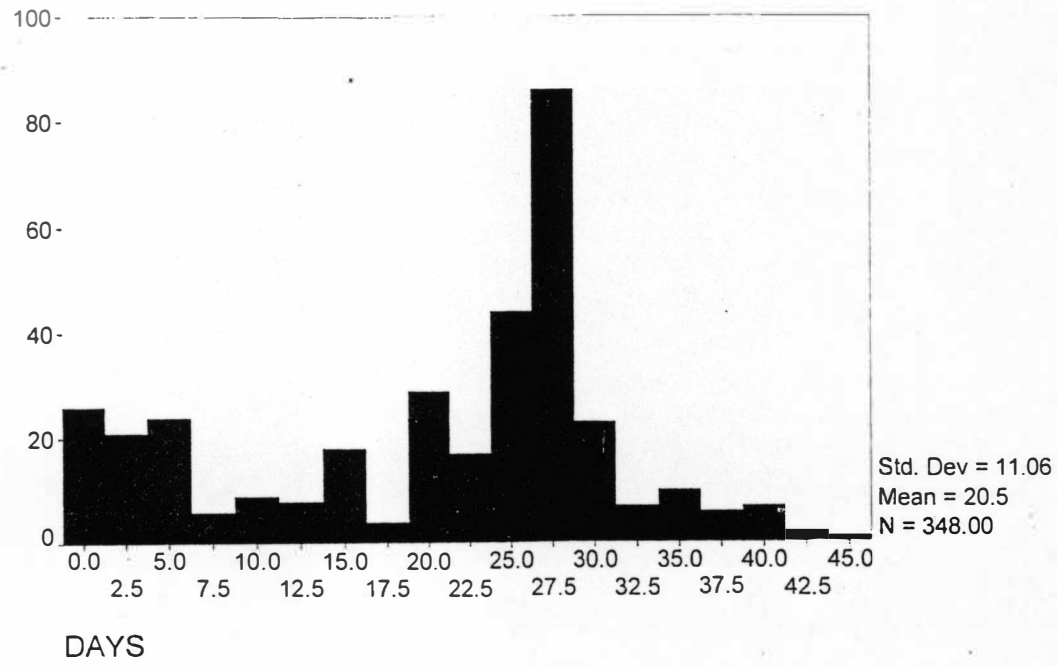

Figure 2. Histogram of Days in Treatment.

Means were calculated on the following variables: age, age at first use, arrests, days in treatment, education, and prior treatment. Table 1 is comprised of the means for the total population and for each subgroup (alcohol or cocaine dependent). Pictoral description is also provided in Figures 3-8. There were significant differences between cocaine and alcohol dependent individuals with respect to age ($t=-3.53$; $p=.000$) and age at first use ($t=15.15$; $p=.000$). Alcohol dependent individuals were older on average ($X=33.77$) than cocaine dependent subjects ($X=30.55$). Furthermore, alcohol dependent subjects were younger when they began drinking ($X=15.00$), whereas individuals in the current study who used cocaine were more likely to begin during later years ($X=24.66$).

Table 1

Means for Age at Admission, Age at First Use, Arrests, Sessions of Treatment, Education, and Prior Treatment

VARIABLE	TOTAL	ALCOHOL	COCAINE
Age at Admission!	32.43	33.77	30.55
Age at First Use!	19.05	15.00	24.66
Arrests	1.83	1.88	1.76
Sessions of Treatment*	20.45	21.95	18.37
Education	11.95	12.05	11.82
Prior Treatment	.75	.77	.74

* Denotes dependent variable (see ANOVA table for statistical differences).
! Statistically Significant (p=.000).

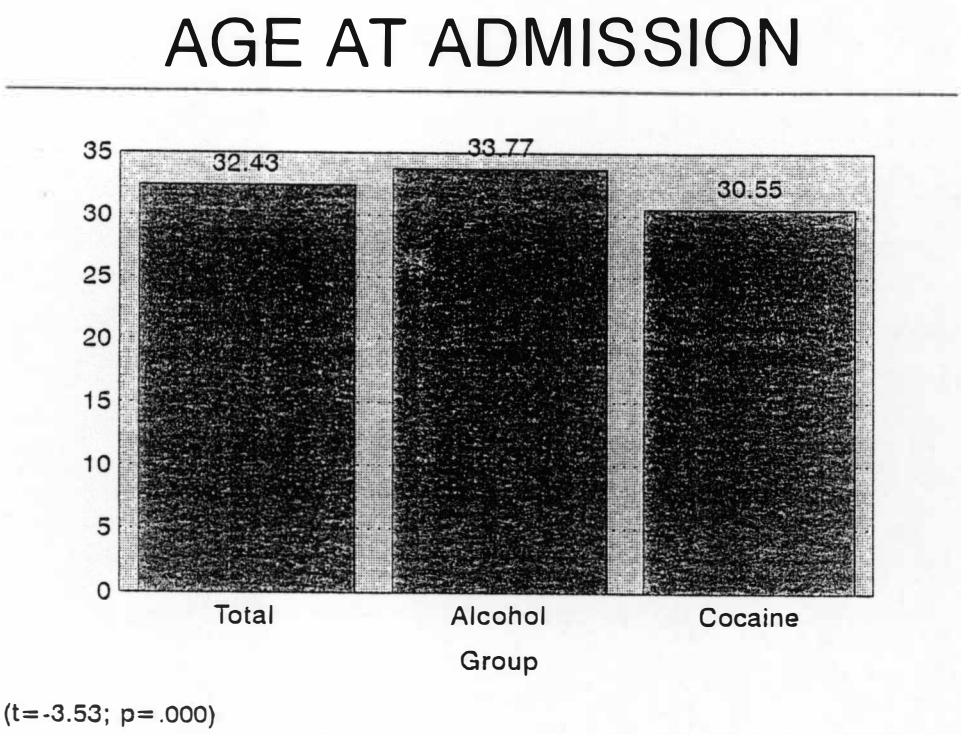

Figure 3. Bar Chart of Means for Age of Admission.

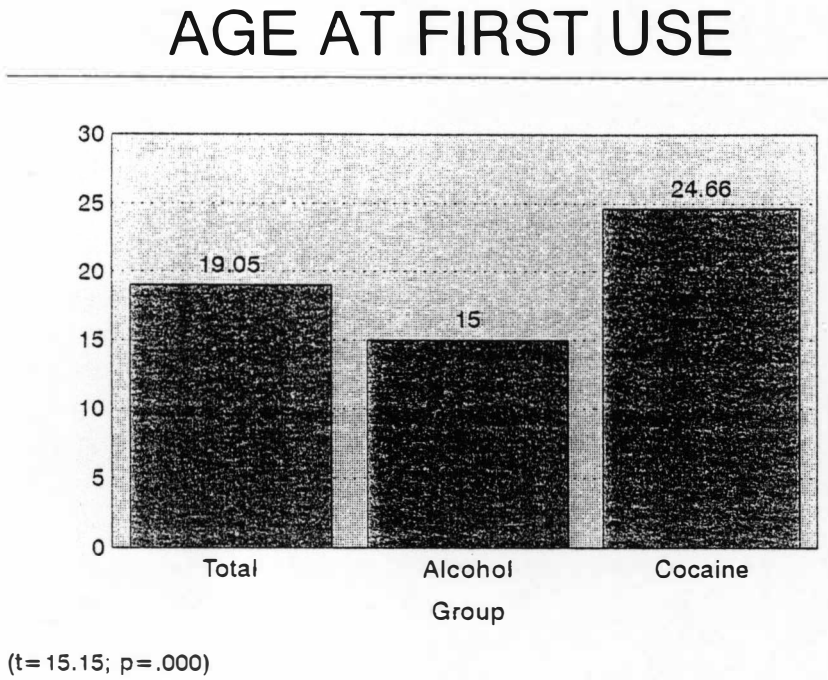

Figure 4. Bar Chart of Means for Age at First Use.

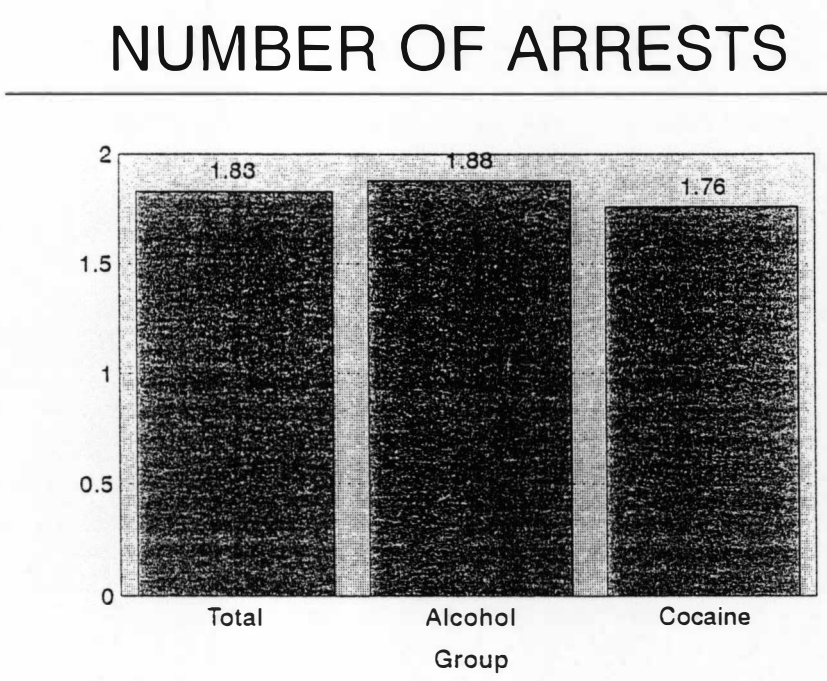

Figure 5. Bar Chart of Means for Arrests.

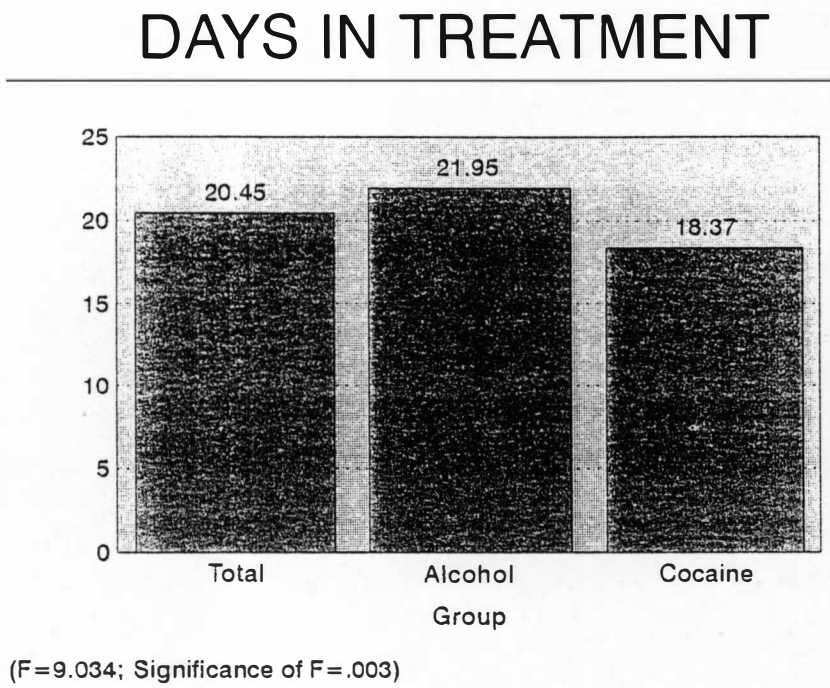

Figure 6. Bar Chart of Means for Sessions of Treatment.

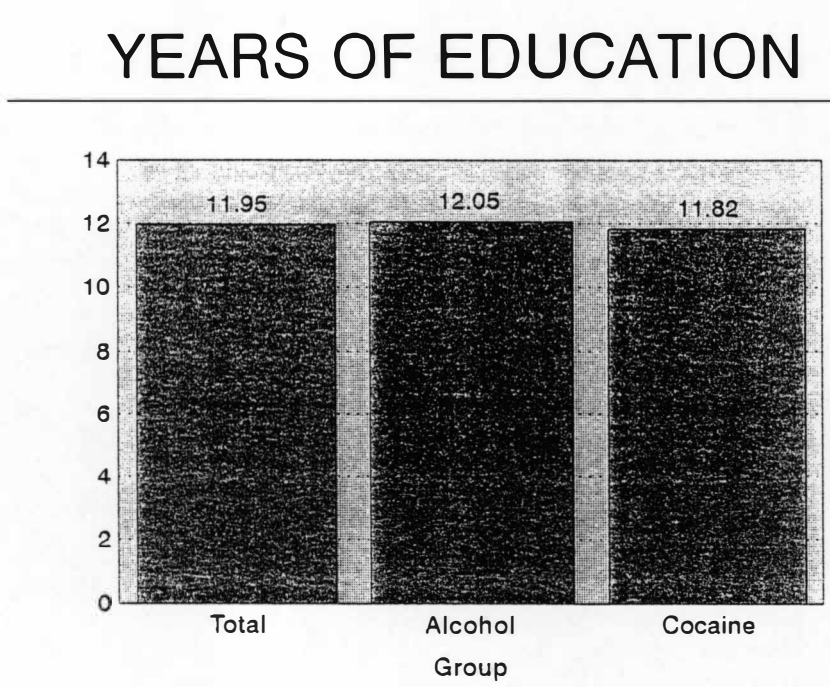

Figure 7. Bar Chart of Means for Education.

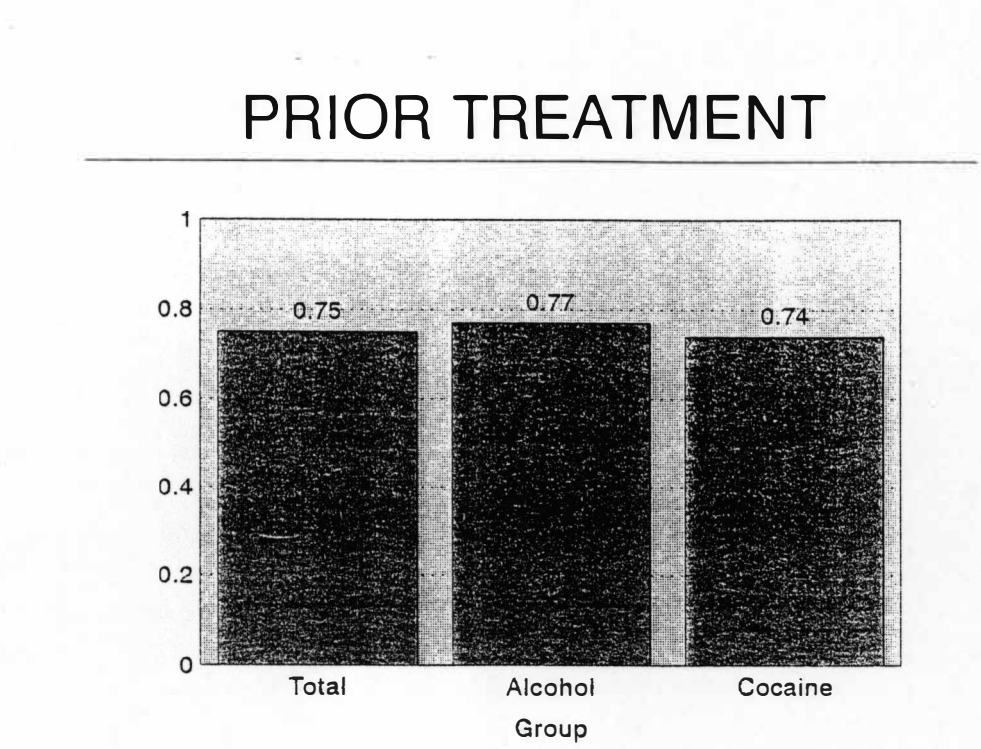

Figure 8. Bar Chart of Means for Prior Treatment.

Percentages were calculated on the following variables: employment, gender, insurance, legal involvement, marital status, race, and route of administration. Table 2 summarizes the data for percentages distinguished between the total population and each subgroup (alcohol or cocaine dependent). Pictoral description is also provided in Figures 9-15. The overall population consisted primarily of individuals who were single (46.0 percent), unemployed (60.8 percent), uninsured (61.6 percent), predominatly male (64.3 percent) and caucasian (64.0 percent). Percentages for route of administration were only figured for cocaine dependent individuals. This is due to the fact that alcohol was orally ingested by all subjects. Therefore, the total population percentages would have been distorted.

Table 2

Percentages for Employment, Gender, Insurance, Legal Involvement, Marital Status, Race, and Route of Administration

Variable	Total	Alcohol	Cocaine
Employment			
Unemployed	60.8	57.3	65.5
Employed	39.2	42.7	34.5
Gender			
Male	64.3	73.3	51.7
Female	35.7	26.7	48.3
Insurance			
None	61.6	57.7	66.9
Private Insurance	38.2	41.8	33.1
Legal Involvement			
No	59.8	54.9	66.4
Yes	40.2	45.1	33.6
Marital Status			
Single	46.0	36.8	58.6
Married	24.3	26.9	20.7
Widowed	.6	.5	.7
Divorced	18.8	23.4	12.4
Separated	10.4	12.4	7.6
Race			
Caucasian	64.0	81.2	40.0
African American	33.7	16.8	57.2
Native American	.9	.5	1.4
Other	1.4	1.5	1.4
Route of Administration			
Oral	N/A	100.0	0.0
Smoked	N/A	N/A	82.1
Intranasal	N/A	N/A	10.3
Injected	N/A	N/A	7.6

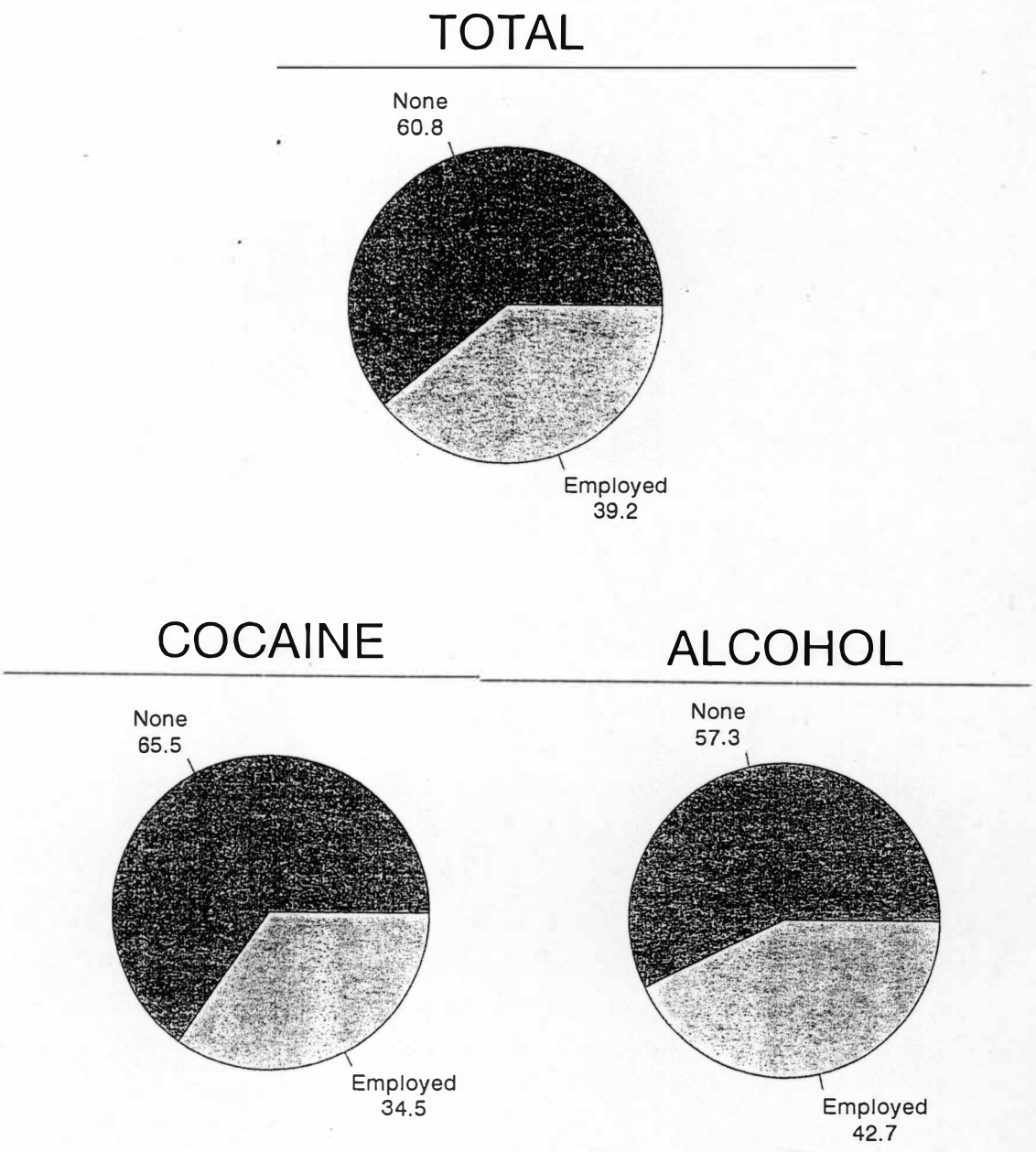

Figure 9. Pie Chart of Percentage for Employment.

The subgroup of individuals who were diagnosed as alcohol dependent were most likely to be male (73.3 percent) and caucasian (81.2 percent). The percentages across the remaining variables (employment, insurance, legal involvement

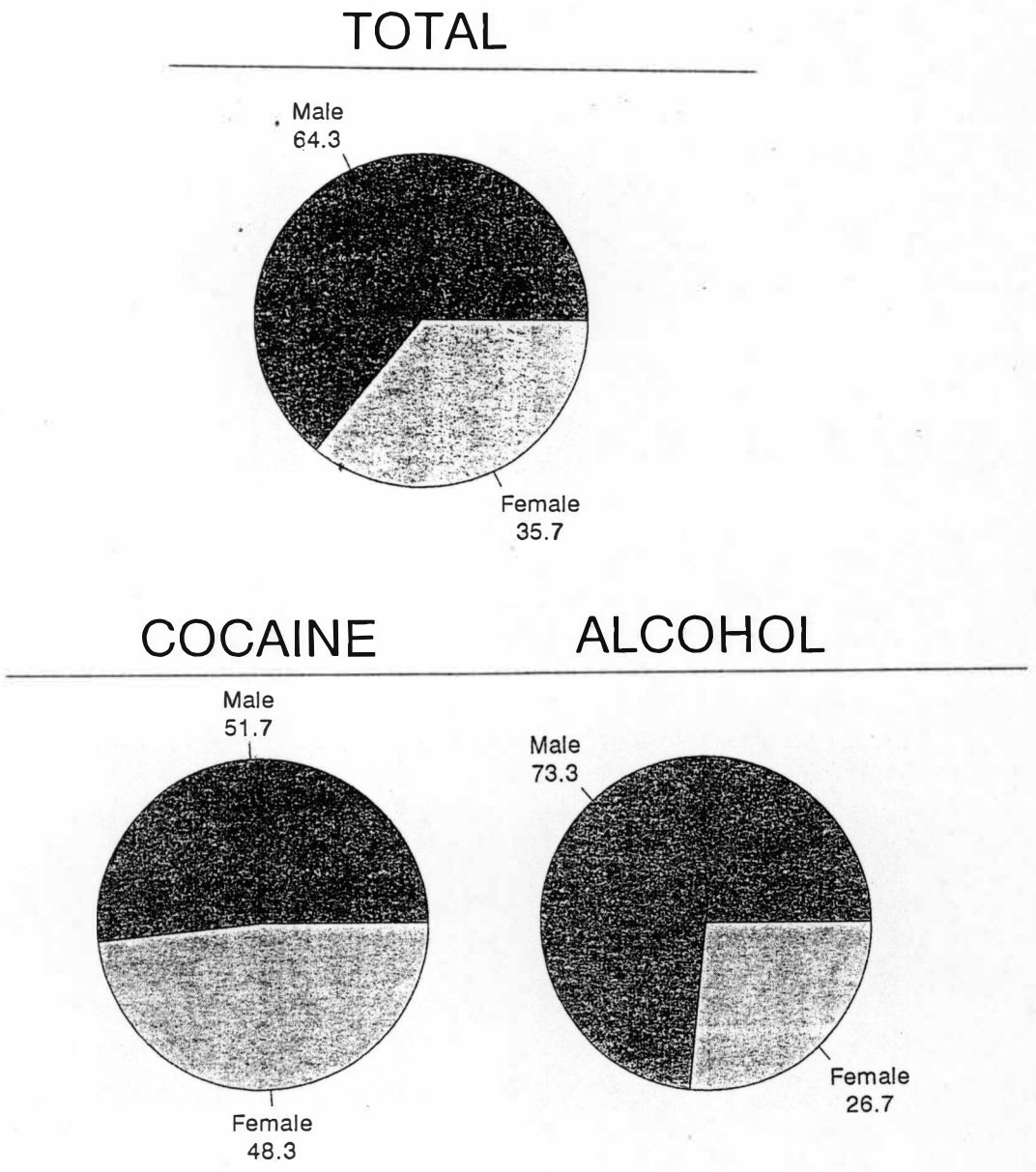

Figure 10. Pie Chart of Percentage for Gender.

and marital status) showed little variance.

Cocaine dependent individuals were characterized in the current study as being predominately unemployed (65.5 percent), uninsured (66.9 percent), single

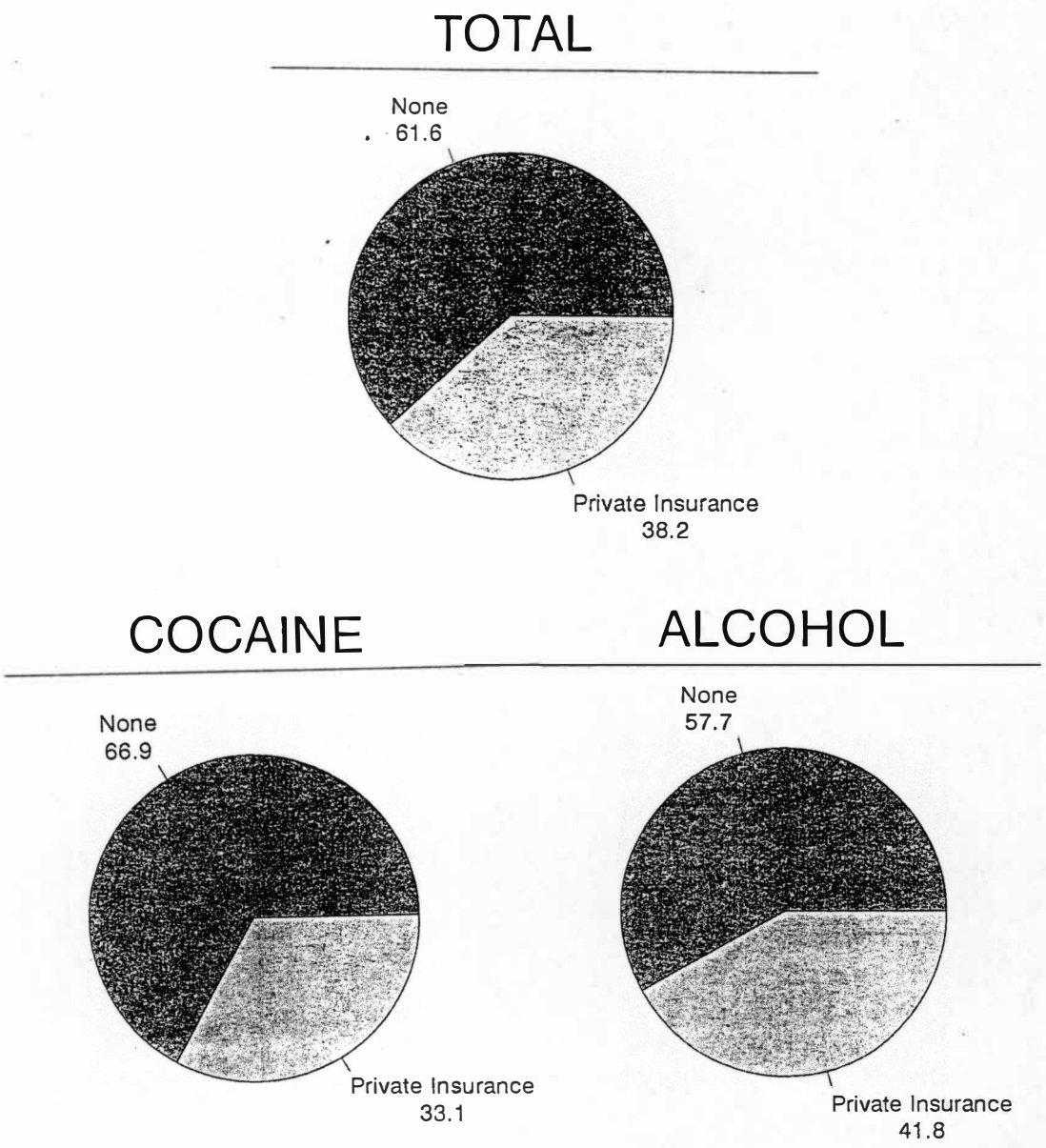

Figure 11. Pie Chart of Percentage for Insurance Coverage.

(58.8 percent) and were not involved in the legal system (66.4 percent). Furthermore, African American's comprised over half of the cocaine dependent group (57.2 percent). The primary route of administration was to smoke crack cocaine

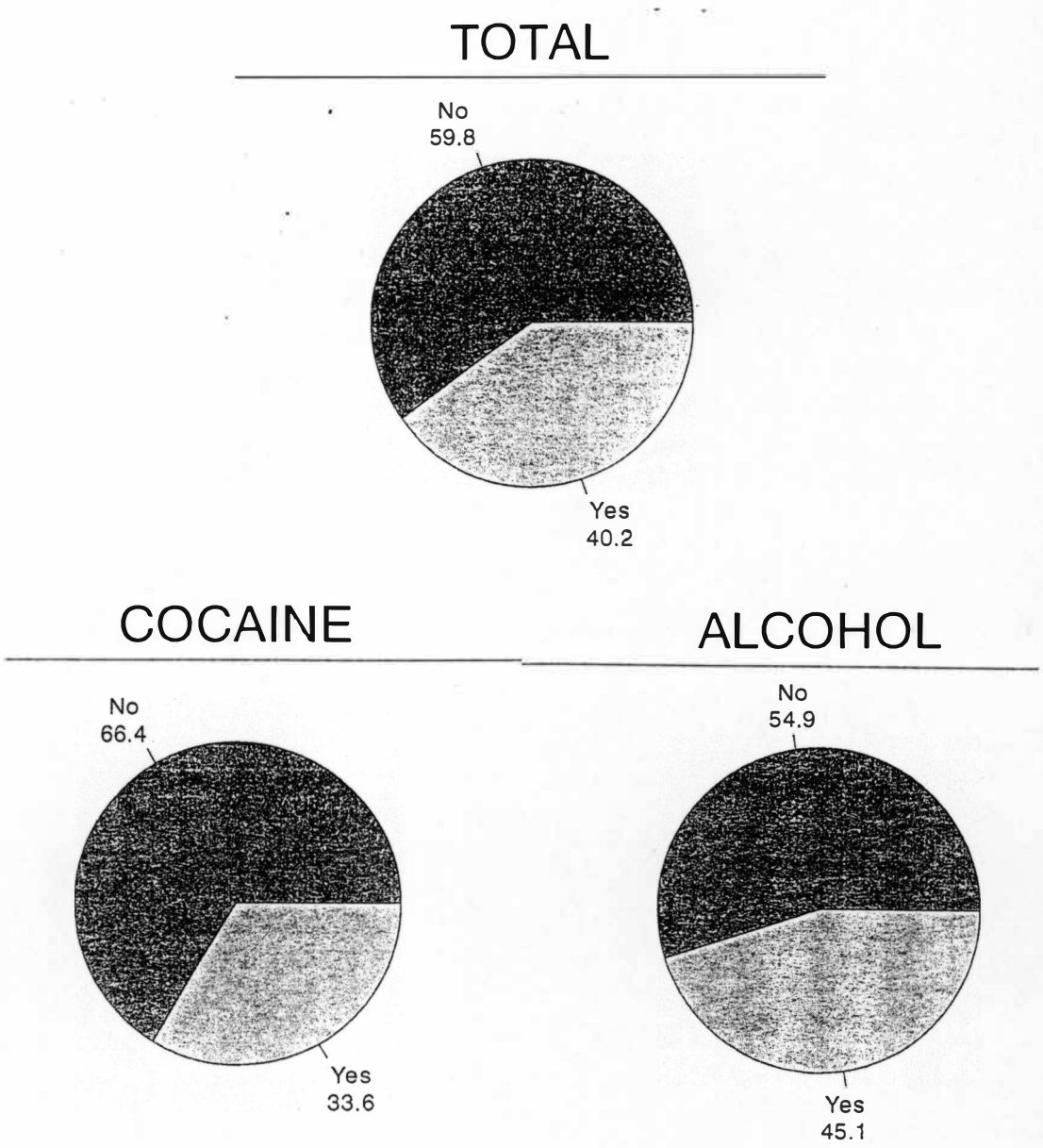

Figure 12. Pie Chart of Percentage for Legal Involvement.

(82.1 percent).

Pregnant women are a special population which requires additional description. Means are summarized in Tables 3 and 4. The pregnant women were

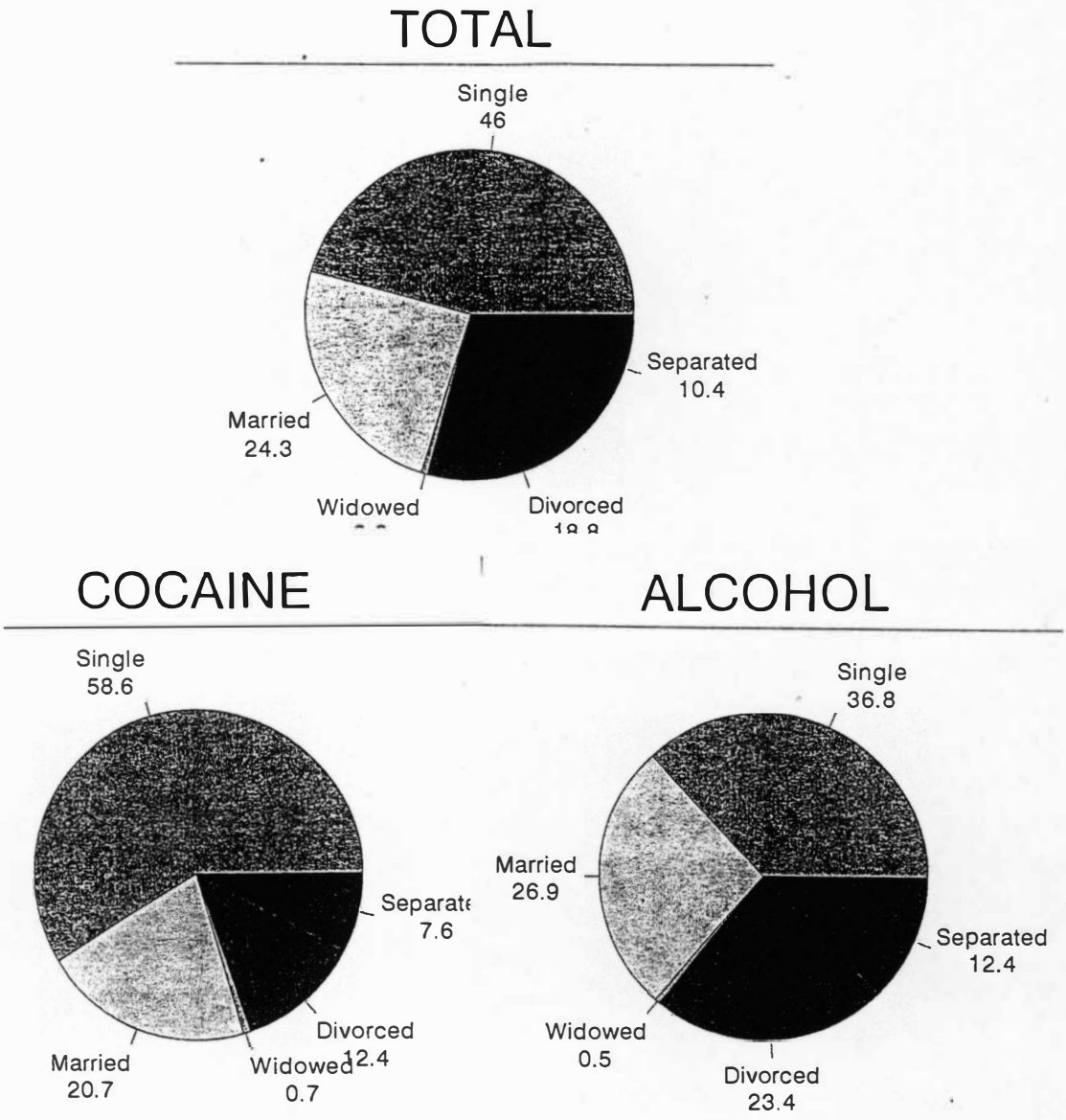

Figure 13. Pie Chart of Percentage for Marital Status.

mainly diagnosed with cocaine dependence (90.3 percent) and the majority of cocaine dependent pregnant women were smoking crack cocaine (96.4 percent). There was approximately equal distribution with respect to successful or unsuccessful discharge (approved=54.8 percent and unapproved=45.2 percent). The

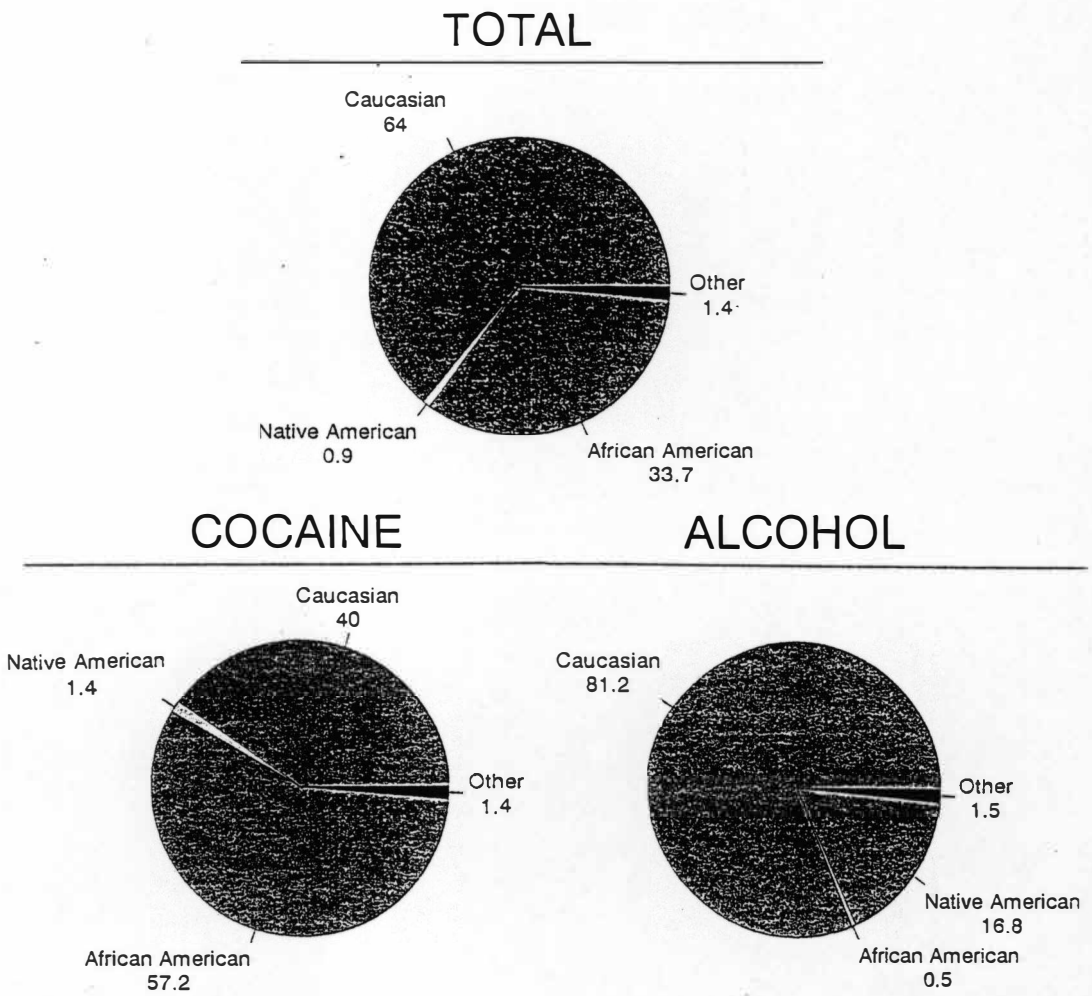

Figure 14. Pie Chart of Percentage for Race.

majority of pregnant women were unemployed (90.3 percent), uninsured (96.8 percent), single (80.6 percent). Furthermore, the pregnant subpopulation was comprised of mainly African Americans (61.3 percent).

Reliability

Thirty percent of the subjects (N=102) were randomly selected for

COCAINE

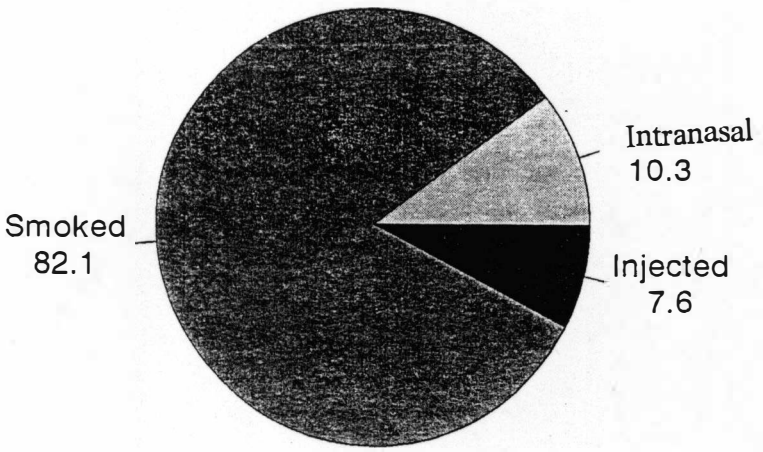

Figure 15. Pie Chart of Percentage for Route of Cocaine Administration.

Table 3

Means of Pregnant Women for Age, Age at First Use, Arrests, Sessions of Treatment, Education, and Prior Treatment

MEANS	
Age	25.97
Age at First Use	20.26
Arrests	1.74
Sessions of Treatment*	17.35
Education	11.32
Prior Treatment	.87

* Denotes dependent variable

Table 4

Percentages of Pregnant Women for Employment, Insurance, Legal Involvement, Marital Status, Race, and Route of Cocaine Administration

Variable	Percent
Employment	
Unemployed	60.8
Employed	39.2
Insurance	
None	96.8
Private Insurance	3.2
Legal Involvement	
No	61.3
Yes	38.7
Marital Status	
Single	80.6
Married	16.1
Separated	3.2
Race	
Caucasian	39.7
African American	61.3
Route of Administation	
Smoked	38.7
Injected	61.3

reliability estimates. There was a total of 1632 data points for the subjects used to determine the reliability of the data. The reliability coefficient was .77, which is somewhat low. It is important to note that most inconsistencies were found early in the data collection process and were related to one of the individuals who

were collecting reliability data. When this assistant was released from the project, the consistency between original data points and reliability increased.

Correlation Matrix

Correlations were calculated for all possible pairs of sociodemographic variables and dependent measures (see Table 5). Due to the high number of correlations in the study, the Bonferonni critical value was computed (r_I= .1871) and compared to the correlation coefficients. This value was used in order to decrease the probability of a Type I error. The correlation coefficients which exceeded the Bonferonni critical value were then inspected in terms of the actual correlation coefficient. There were no significant correlations between sociodemographic variables and the dependent measures. Table 5 represents the correlations between the independent variables and the dependent measures (number of days in treatment and type of discharge).

Correlations between all possible pairs of sociodemographic variables were calculated in order to delineate possible relationships between the variables. There were several pairs of correlations which exceeded the Bonferroni critical value (r_I= .1871). (These values can be identified in Table 6.) Although these values exceeded the critical value, the greatest correlation was between route of administration and diagnosis (r=.7012). The correlation is inherently elevated due to the relationship between type of drug and route of administration. More specifically, all alcohol dependent individuals in the sample used alcohol by orally

Table 5

Correlations Between Sociodemographic and Dependent Variables

VARIABLE	SESSIONS		DISCHARGE	
	r	p value	r	p value
Age	-.0198*	.713	.5261****	.258
Age at First Use	-.1258*	.019	.4655****	.925
Arrests	-.0314*	.564	.3238****	.699
Diagnosis	.1597**	.003	.1130****	.215
Education	.0372*	.492	-.3614****	.087
Employment Status	-.0999**	.064	.1971****	.003
Gender	-.0002**	.996	.093****	.388
Insurance	-.0356**	.508	.1718****	.104
Legal Involvement	.0907**	.096	.0798****	.539
Marital Status	.5837****	.336	.1493****	.799
Pregnancy Status	-.0882**	.100	.0950****	.367
Prior Treatment	-.1035*	.054	.2944****	.109
Race	.5530****	.071	.1991****	.243
Route of Administration	.5640****	.025	.3013****	.000

* biserial correlation
** point biserial correlation
**** coefficient of contingency
Bonferonni Critical Value for Correlation Coefficients: $r_I = .1871$

Table 6

Intercorrelation Matrix for Demographic Variables

VARIABLE	1	2	3	4	5	6	7	8	9	10	11	12	13
1. AGE	---												
2. AGE AT FIRST USE	.1653 .002*	---											
3. NUMBER OF ARRESTS	-.2168 .000*	-.1210 .026*	---										
4. DIAGNOSIS	.1865 .000*	-.6325 .000*	.0214 .696	---									
5. EDUCATION	.2777 .000*	.0358 .508	-.2017 .000*	.594 .273	---								
6. EMPLOYMENT	-.0268 .245	-.0008 .989	.1774 .001*	-.0832 .123	-.2019 .000	---							
7. GENDER	-.1489 .005*	.1228 .022*	-.1221 .025*	-.2217 .000*	-.0473 .382	.1918 .000	---						
8. INSURANCE	-.1629 .002*	-.0458 .395	.1614 .003*	-.0969 .072*	-.1759 .001	.5858 .000	.1736 .001	---					
9. LEGAL INVOLVEMENT	-.1827 .001*	-.0583 .284	.4108 .000*	.1165 .032*	-.1086 .046	.1598 .003	-.0343 .529	.2235 .000	---				
10. MARITAL STATUS	.6266 .001*	.5668 .318	.3638 .768	.2188 .002*	.4124 .045	.1956 .008	.0937 .546	.3336 .000	.2057 .005	---			
11. PREGNANCY STATUS	-.3581 .000*	-.0049 .957	.0862 .341	-.1723 .056	-.3944 .000*	.9880 .275	.4203 .000*	.3131 .000*	.0096 .916	-.3634 .000*	---		
12. PRIOR TREATMENT	.1592 .003*	-.0898 .096*	-.0678 .214	.0103 .849	.1433 .008	.0557 .304	-.0364 .499	-.0276 .610	-.0197 .718	.3288 .115	.0293 .587	---	
13. RACE	.5175 .004*	.5982 .000*	.3010 .890	.3947 .300*	.3527 .134	.1876 .006	.1395 .075	.1973 .029	.1517 .046	.1878 .392	.1800 .009	.2688 .307	---
14. ROUTE OF ADMIN.	.4972 .702*	.6718 .000*	.3793 .109	.7012 .000*	.2409 .991	.1539 .039	.2522 .000	.1556 .197	.1507 .049	.2444 .037	.3278 .000	.1912 .964	.4457 .000

* P-values appeared to be significant, however, correlation coefficients were all below .80.

ingesting the substance. Therefore, it is a high correlation due to the inherent relationship between alcohol and oral ingestion.

Analysis of Variance

Originally, an ANCOVA was going to be computed in order to address any variables associated with the number of sessions in treatment. Due to the lack of significant correlations, a regular analysis of variance (ANOVA) was computed using diagnosis as the independent or classification variable and days in treatment as the dependent measure. The analysis determined that in the current study there was a significant difference [$F(1, 345)=9.034$; $p=.003$) in the number of sessions a client remains in treatment based on diagnosis of alcohol or cocaine dependence. The mean length of stay for alcohol dependent individuals was 21.95 sessions where as cocaine dependent individuals remained in treatment for an average of 18.37 sessions. Therefore, cocaine dependent individuals are less likely to remain in treatment. Table 7 is comprised of the ANOVA Summary Table.

Chi Square

In order to determine if the differences between cocaine and alcohol dependent individuals were significant with respect to the type of discharge, Chi Squares were computed (see Appendix D). First, a 2 X 5 Chi Square was computed between type of diagnosis and type of discharge (approved, against staff advise, mutual, or code of conduct). The results indicated that the minimum

Table 7

Analysis of Variance Summary Table: Number of Sessions

Source	Sum of Squares	DF	Mean Square	F	Sig. of F
Main Effects (Diagnosis)	1081.839	1	1081.839	9.034	.003
Residual	41316.029	345	119.757		
Total	42397.867	346	122.537		

expected frequency in each cell was to be a minimum of 10.9 subjects. The results indicated that there were only 10 subjects in the cell defined by cocaine dependent individuals who were given a code of conduct discharge. As a result, it was necessary to collapse the types of discharges in order to meet the chi square assumption of expected frequencies. A visual display of both raw and collapsed data can be seen in Figure 16. The data was transformed in order to simply distinguish between successful and unsuccessful discharges. The resulting chi square did not reach statistical significance [$r(1)=2.88$; $p=.09$). Therefore, the current study indicates that there are no significant differences between cocaine and alcohol dependent individuals in regards to successful or unsuccessful discharges.

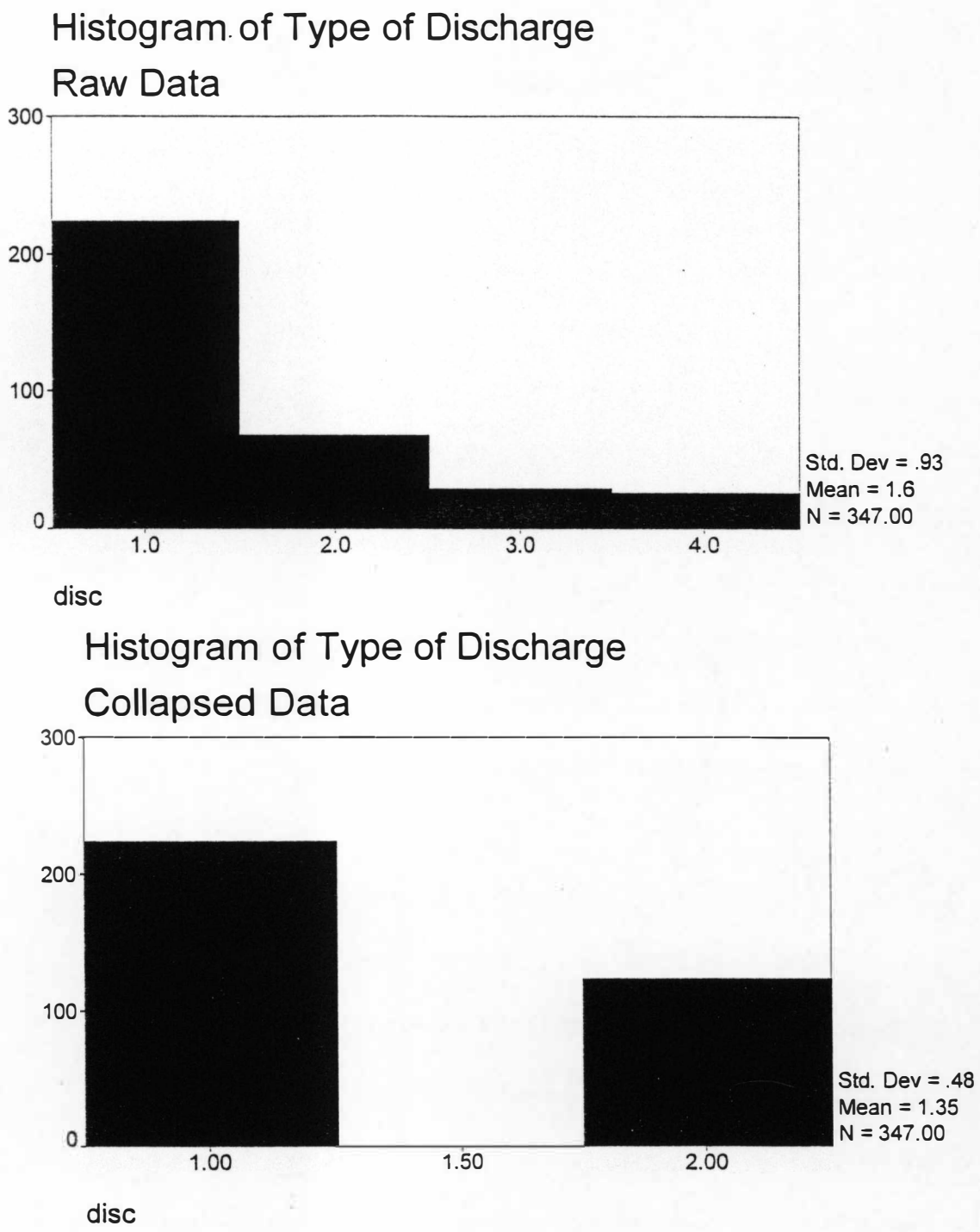

Figure 16. Histogram for Type of Discharge.

CHAPTER VI

DISCUSSION AND RECOMMENDATIONS

Discussion

The literature review indicated there were inconsistencies between studies which considered variables assumed to be predictive of retention. The findings in the current study support earlier findings regarding demographic variables related to treatment retention. That is, there were no significant correlations between any of the demographic variables and the dependent measures of days in treatment and type of discharge. Therefore, the concensus in the literature that few if any predictors are reliably related to treatment retention was supported in the current study.

The significant difference between length of stay for the two groups of subjects coupled with the non-significant findings regarding type of discharge has several implications. First, cocaine dependent individuals may receive successful discharges from treatment after shorter periods. Reasons behind this observation may be related to Washton and Stone-Washton's (1990) clinical observation that the onset of cocaine addiction is much more rapid than that of alcohol addiction. (This observation was supported in the current study with respect to the significant differences between age and age at first use.) Therefore, there may be a

crisis associated with admission for treatment of cocaine dependence. As the client is removed from the drug use environment and gets stabilized rather quickly, the intensity of the crisis may subside or disappear. Therefore, the cocaine dependent client is discharged more quickly than the alcohol dependent client. In contrast, the alcohol dependent person may experience severe withdrawal symptoms. The medical complications and engrained patterns of interacting over time may cause some the distress associated with alcohol treatment. These difficulties remain for a longer period and therefore, longer periods of treatment may be necessary.

These findings coupled with the severely addictive nature of cocaine may have a significant impact on how treatment is formulated. If in fact cocaine dependent individuals are released earlier due to more rapid improvement, it will be important for clinicians to develop strong relapse prevention programs which assist the client in abstaining from cocaine use.

Another aspect of cocaine addiction may be the high degree of social deviancy and manipulation which characterizes cocaine dependent individuals (Washton & Stone-Washton, 1990). The current study was able to measure social deviancy only by legal involvement and the number of arrests. There were no significant differences between the two groups on either measure. However, with the proposed rapid onset of cocaine dependence, cocaine dependent individuals may not have come into contact with legal authorities prior to engaging in treatment. Furthermore, the deviant activities associated with obtaining and using

cocaine may have increased the manipulative skills of cocaine dependent clients. Therefore, cocaine dependent individuals may be more manipulative and dishonest with regards to treatment progress. If the cocaine dependent individual is less likely to honestly report urges to use or problems while in treatment, they may be discharged sooner. The impact of the manipulative behavior while in treatment may contribute to the high incidence of relapse for cocaine dependent subjects.

It is important to consider the group differences between cocaine and alcohol dependent subjects in relation to success in treatment. Sensitivity to special populations in the treatment of addictive disorders is encouraged, especially minorities and women. The findings of the current study indicate that there are demographic differences between the cocaine and alcohol dependent groups. More specifically, alcohol dependent subjects were most likely male and caucasian. Cocaine dependent subjects were characterized by unemployment, lack of insurance and single. The cocaine dependent group also had a greater percentage of women and African Americans than the alcohol dependent group. These differences are very similar to the special population targets which may require sensitivity to the issues which interfere with recovery from substance dependence.

Limitations of the current study include the lower than desired inter-observer reliability. As mentioned earlier, upon recognition of difficulties with collecting reliability data, one assistant was removed from the project. Subsequently, the number of errors resulting from the remaining assistant was

significantly lowered. Another limitation includes the lack of generalizability due to the nature of the subject pool. All subjects were from one geographical area and received services in the same treatment center. Therefore, generalizability beyond clients served by Gateway Villa is limited.

Recommendations

Future research would be beneficial in this area in order to improve substance abuse treatment. First, it would be advantageous to include follow-up data on relapses after discharge from treatment. Therefore, it may be possible to identify a relationship between the number of days in treatment and prolonged abstinence. Second, an experimental analysis of the differences in treatment effectiveness between clients participating in a mixed group (alcohol, cocaine, etc.) and treatment tailored for a cocaine specific population may also provide clinically useful information regarding what variables constitute effective treatment for cocaine dependence. Finally, because length of treatment is associated with positive outcome, considering the current impact of managed care on the length of treatment and treatment effectiveness may be of significant value.

Appendix A

Initial Assessment Form

INITIAL ASSESSMENT SUMMARY

DATE/TIME:_____ CASE MANAGER:_____
PRECIPITATING EVENT/PRESENTING PROBLEM:

	Current use	Maximum use	Age of Onset	Last Use	Route
Primary: _____	Amt:_____ _____/30 days	Amt:_____ _____/30 days			IV ORAL INH SMK OTHER
Secondary: _____	Amt:_____ _____/30 days	Amt:_____ _____/30 days			IV ORAL INH SMK OTHER
Other: _____	Amt:_____ _____/30 days	Amt:_____ _____/30 days			IV ORAL INH SMK OTHER
Other: _____	Amt:_____ _____/30 days	Amt:_____ _____/30 days			IV ORAL INH SMK OTHER
Other: _____	Amt:_____ _____/30 days	Amt:_____ _____/30 days			IV ORAL INH SMK OTHER

Substance of preference: _____

SYMPTOMS OF ADDICTION: "/" and describe all that apply:

- ☐ BLACKOUTS_____
- ☐ TOLERANCE_____
- ☐ LOSS OF CONTROL_____
- ☐ OVERDOSES_____
- ☐ FAMILY HISTORY_____
- ☐ DENIAL_____
- ☐ PREVIOUS TREATMENT:
  - ☐ Substance Abuse: _____
  - ☐ Mental Health: _____
- ☐ LEGAL IMPAIRMENT_____
- ☐ FAMILY PROBLEMS_____
- ☐ SOCIAL IMPAIRMENT_____
- ☐ MEDICAL PROBLEMS_____
- ☐ OCCUPATIONAL IMPAIRMENT_____
- ☐ FINANCIAL IMPAIRMENT_____
- ☐ HISTORY OF PHYSICAL ABUSE_____
- ☐ HISTORY OF SEXUAL ABUSE_____
- ☐ HISTORY OF EMOTIONAL ABUSE_____
- ☐ SUPPORT GROUP ATTENDANCE_____
- ☐ OTHER_____

ASAM CRITERIA:

1. INTOXICATION/WITHDRAWAL POTENTIAL (History of withdrawal or seizures, use in last 48 hours, physical symptoms of intoxication or withdrawal):

1. ASAM LEVEL:_____

PATIENT NAME: _____ I.D. NUMBER_____

2. BIOMEDICAL CONDITIONS AND COMPLICATIONS (Concomitant medical conditions):

2. ASAM LEVEL:_____

3. EMOTIONAL/BEHAVIORAL CONDITIONS AND COMPLICATIONS (Depression, risk of harm to self or others, significant stressors, history of violence, personality disorders):

3. ASAM LEVEL:_____

4. TREATMENT ACCEPTANCE/RESISTANCE (Patient's perception of dependence):

4. ASAM LEVEL:_____

5. RELAPSE POTENTIAL (Results of previous episodes of treatment and previous attempts to control or moderate use):

5. ASAM LEVEL:_____

6. RECOVERY ENVIRONMENT (Factors in patient's social, occupational, and/or living environment that may impact course of treatment):

6. ASAM LEVEL:_____

DIAGNOSIS:_____(_____) _____(_____)
PRIMARY CODE SECONDARY CODE

ASAM PATIENT PLACEMENT SUMMARY: LEVEL 0 1 2 3 4

RECOMMENDED LEVEL OF CARE: (Specify modality, site, therapist and/or group, as appropriate)

BARRIERS TO TREATMENT:

NEXT STEP FOR CLIENT:

PRIMARY THERAPIST TO COMPLETE THIS SECTION

INITIAL TREATMENT PLAN:

DISCHARGE CRITERIA/EXPECTED GOAL COMPLETION:

I HAVE REVIEWED THE SUMMARY; THE INITIAL ASSESSMENT IS ACCURATE AND THE PATIENT IS APPROPRIATELY PLACED IN TREATMENT.

THERAPIST:_____DATE:_____

Appendix B

Michigan Department of Public Health
Office of Substance Abuse Services
Data System Form

MICHIGAN DEPARTMENT OF PUBLIC HEALTH
OFFICE OF SUBSTANCE ABUSE SERVICES-DATA SYSTEM

OSAS-021 (12/91)
Authority: P.A. 368 of 1978, as amended

CLIENT ADMISSION

☐ ORIGINAL ☐ CORRECTION ☐ DELETION

PROGRAM NAME:_____ CODE:_____ COMPLETED BY:_____

1. CLIENT I.D. # _____
2. UNIVERSAL I.D. # _____
3. SERVICE CATEGORY _____
4. ADMISSION DATE _____ (Month Day Year)
5. POSITION # _____
6. ADMISSION TYPE 1=First Admission 2=Readmission
7. PREVIOUS SUBSTANCE ABUSE ADMISSION(S) _____
8. SOURCE OF REFERRAL (Circle Only One)

From Substance Abuse Program:

1=Outpatient
5=Resid:Detox/ASP
6=Residential
9=Intensive Outpatient
10=Hosp:Acute Care
11=Hosp:Rehab
12=Hosp:Sub-acute Detox
13=Central Assmnt
14=Other SARF
16=Drunk Driving Assmnt
17=AHSE
18=Prevention
19=Student Assistance Program
29=Other: _____

Specify: _____ (County) _____ (Program)

Or From Other Areas:

30=Self
31=Court-Driving
32=Court-Other
33=Other Crim Justice
34=Police
35=Secretary of State
36=Lawyer
37=Mental Health
38=Dept. of Soc. Srvcs
39=Family/Friend/Rel
40=Other Human Srvcs
41=Employer
42=Union
43=Clergy
44=School
45=Physician
46=Hospital (Non-SA)
47=Sub Abuse Client
48=Alcoholics Anon
49=Corrections
90=Other_____

9. RESIDENCE _____ (County) _____ (Census Tract/CVT Code)
10. DATE OF BIRTH _____ (Month Day Year)
11. SEX 1=Male 2=Female
12. RACE

1=White
2=Black
4=Native American
5=Asian
6=Other
7=Alaskan Native

13. ETHNIC BACKGROUND

0=Not one of listed groups
1=Puerto Rican
2=Mexican
3=Cuban
4=Other Hispanic
5=Arab/Chaldean

14. MARITAL STATUS

1=Never Married
2=Married/Cohabitating
3=Widowed
4=Divorced
5=Separated

15. MILITARY SERVICE 0=No 1=Yes
16. EDUCATION (Highest Grade Completed) _____
17. CURRENT EMPLOYMENT STATUS (Circle Only One)

In Labor Force:
1=Employed; full-time (35 or more hours per week)
2=Employed; part-time (Fewer than 35 hours per week)
3=Unemployed (laid off, first, seasonal, looking for work, etc.)

Not In Labor Force:
4=Homemaker
5=Student
6=Retired
7=Other: _____

18. IN SCHOOL NOW 0=No 1=Yes
19. PERSONAL INCOME _____ (Actual gross for past 12 months)
20. HOUSEHOLD INCOME _____ (Actual gross for past 12 months)
21. NUMBER OF DEPENDENTS (Include Client) _____
22. PUBLIC ASSISTANCE 0=No 1=Yes
23. HEALTH INSURANCE COVERAGE

00=No Insurance Coverage
20=Blue Cross/Blue Shield
30=Commercial Carrier
50=Self-Insured Program/Fund
60=Medicare-Old Age
61=Medicare-Disability
62=Medicaid (Insurer I.D.#) _____
70=Health Maintenance Organization (HMO) Preferred Provider Organization (PPO)
90=Other-Specify: _____

24. LEGAL STATUS

0=No Current Actions or Cases
1=In Jail
2=Parole
3=Probation
4=Awaiting Trial
5=Awaiting Sentencing
6=Other: _____

25. ARREST HISTORY

	No. Times Arrested Last 6 Mos.	No. Times Arrested Last 5 Yrs.
Total of all Arrests		
Posession or Sale of Drugs/Alcohol		
Drunk or Impaired Driving		

00=No Arrests for Period

26. LIVING ARRANGEMENTS

1=Independent 2=Dependent 3=Homeless

27. SUBSTANCE USE HISTORY

	Primary	Secondary	Tertiary
Drug Code			
Route of Admin.			
Age at First Use			
Days Used in Last 30			
Initially a Prescription?			

28. METHADONE PART OF TREATMENT 0=No 1=Yes
29. DIAGNOSTIC CODE Primary _____ Secondary _____
30. SUBSTANCE USE GOAL

1=Abstinence 2=Controlled Use 3=Not Applicable

31. PREGNANT AT ADMISSION 0=No 1=Yes
32. OTHER FACTORS (Circle up to 3)

1=Codependent
2=Adult Child
3=Significant Other
4=Hearing Impaired
5=Visually Impaired
6=Head Injury
7=Mental Retardation
8=Mobility Impaired
9=Mental Illness

33. SPECIAL DATA/CODED REMARKS

_____
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Appendix C

Data Collection Forms

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	ID NO	PrimDx	Days	D/C	Age	Educ	Emp	Gender	Ins	PriorTx	Race	Legal	Marital	Arrest	Route	Age 1st Use
2																
3																
4																
5																
6																
7																
8																
9																
10																
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Appendix D

Chi Square Analyses

DIAG Page 1 of 1

DISC	Count / Exp Val / Row Pct / Col Pct / Tot Pct	Cocaine 0	Alcohol 1	Row Total
1 Approved		86	137	223
		93.5	129.5	64.5%
		38.6%	61.4%	
		59.3%	68.2%	
		24.9%	39.6%	
2 ASA/AMA		33	35	68
		28.5	39.5	19.7%
		48.5%	51.5%	
		22.8%	17.4%	
		9.5%	10.1%	
3 Mutual		16	13	29
		12.2	16.8	8.4%
		55.2%	44.8%	
		11.0%	6.5%	
		4.6%	3.8%	
4 Code of Conduct		10	16	26
		10.9	15.1	7.5%
		38.5%	61.5%	
		6.9%	8.0%	
		2.9%	4.6%	
Column Total		145	201	346
		41.9%	58.1%	100.0%

Chi-Square	Value	DF	Significance
Pearson	4.47100	3	.21489
Likelihood Ratio	4.43087	3	.21854
Linear-by-Linear Association	1.24382	1	.26474

Minimum Expected Frequency - 10.896

Statistic	Value	ASE1	Val/ASE0	Approximate Significance
Pearson's R	-.06004	.05386	-1.11566	.26534
Spearman Correlation	-.08293	.05391	-1.54349	.12363

Number of Missing Observations: 2

DISC disc by DIAG diag

DIAG Page 1 of 1

Count / Exp Val / Row Pct / Col Pct / Tot Pct	Cocaine 0	Alcohol 1	Row Total
DISC			
1 Approved	86	137	223
	93.5	129.5	64.5%
	38.6%	61.4%	
	59.3%	68.2%	
	24.9%	39.6%	
2 Not Approved	59	64	123
	51.5	71.5	35.5%
	48.0%	52.0%	
	40.7%	31.8%	
	17.1%	18.5%	
Column Total	145	201	346
	41.9%	58.1%	100.0%

Chi-Square	Value	DF	Significance
Pearson	2.87876	1	.08976
Continuity Correction	2.50549	1	.11345
Likelihood Ratio	2.86727	1	.09040
Linear-by-Linear Association	2.87044	1	.09022
Fisher's Exact Test:			
One-Tail			.05693
Two-Tail			.11089

Minimum Expected Frequency - 51.546

Statistic	Value	ASE1	Val/ASE0	Approximate Significance
Pearson's R	-.09121	.05394	-1.69886	.09025
Spearman Correlation	-.09121	.05394	-1.69886	.09025

Number of Missing Observations: 2

Appendix E

Protocol Clearance From the Human Subjects
Institutional Review Board Approval

Human Subjects Institutional Review Board

Kalamazoo, Michigan 49008-3899
616 387-8293

WESTERN MICHIGAN UNIVERSITY

Date: May 17, 1995

To: Barbara A. Johnston

From: Christine Bahr, Acting Chair

Re: HSIRB Project Number 95-04-08

This letter will serve as confirmation that your research project entitled "Differences in retention rates between cocain and alcohol dependent individuals in a drug-free setting" has been **approved** under the full category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you must seek specific approval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date. In addition if there are any unanticipated adverse or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: May 17, 1996

xc: Robertson, PSY

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