Alcoholism Treatment with Biochemical Restoration as a Major Component

Joan Mathews-Larson, Ph.D. and Robert A. Parker, M.Sc.
Health Recovery Center, Inc., Minneapolis, MN

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Abstract

This study reports on the rate of sobriety of (n=100) alcoholic patients exposed to an experimental six-week outpatient treatment program concentrating on biochemical restoration combined with rational-emotive therapy. Sixty percent of subjects had failed one or more alcohol treatment program(s) prior to participating in this study. Eighty-five percent of the subjects reported themselves as "abstinent and stable" at 12 and 42 months post-treatment. Of this number, 60% were continuously abstinent and stable after program completion, 18% had a brief period of use but resumed abstinent status. Of 15% drinking at follow-up, five fit a "social" drinking pattern, while 10% reported drinking regularly. Symptoms characteristically seen in many abstinent alcoholics were significantly reduced or eliminated during the first six weeks of treatment, including alcohol cravings, depression, emotional labiality, and confusion. Two distinct biochemical patterns vulnerable to alcohol dependence are suggested. Other outcomes and their implications for treatment and research are discussed (Intl J Biosocial Res., 1987:9(l); 92-106).

Introduction

Hundreds of studies during the last three decades have reported abstinence figures in the 15-30% range for treated alcoholics [1-6], psychological treatment being the primary modality. A few studies show similar outcomes for untreated alcoholics, which complicates alcoholism research. [7-9] Emrick, in a review of 384 psychologically oriented studies, commented: "Mean

abstinence rates did not differ between treated and untreated alcoholics." [10] The consistency of this outcome pattern is reflected in a 1985 follow-up report of 1,070 treated alcoholics, 5-7 years after treatment, where only 15% had become totally abstinent. [11] Additionally, over 13%, or about three times the expectancy rate, died. [11] Also, two recent reviews seriously question the effectiveness of current treatment approaches. [12,13]

Complicating this issue even further are several reports of various symptoms present long after alcoholics had been treated yet remained abstinent. [14-16] These symptoms included: anxiety, depression, tremors, memory dysfunctions, and interpersonal "sensitivity." In commenting, Gerard and Saenger [14] stated "...we were often astonished to note how prolonged abstinence could accompany such gross mental disturbances and maladjustments."

A number of recent findings linking emotional symptoms to altered neurochemistry and nutrient deficiency states suggest that an emphasis on biochemical techniques may be effective in reversing many previously unmanaged symptoms. [17-20] Over thirty years ago Dr. Roger Williams at the University of Texas pointed out the settling effect an amino acid, glutamine, has on cravings in alcoholics. [21] Ethanol impairs another amino acid's transport (tryptophan) to the brain, affecting serotonin levels and playing a key role in depression, appetite, restlessness, and other "mood" states. [22] Several studies have demonstrated that ethanol can disrupt amino acid uptake. [23] Another amino acid, tyrosine, a precursor to norepinephrine, and tryptophan the precursor to serotonin, may play major roles in depression. [24]

Similarly, ethanol impairs low level thiamine transport [25], affecting irritability, aggressiveness, and impulse control [26], as well as memory loss and lack of concentration. [27] Zinc deficiency plays an important part in appetite, taste perception, learning ability, and the integrity of the immune system. [28] Alcohol increases magnesium, calcium and zinc excretion. Delirium tremors experienced by alcoholics have been treated with magnesium treatment. [29] It is important to recognize that these and other minerals play a role in health symptoms labeled "emotional". Correcting these nutritional deficiencies or imbalances, it is hypothesized, may be an essential component of alcoholism treatment.

Similar connections, as discussed above, can be made for other vitamins, minerals, amino acids, and essential fatty acids, all in conjunction with neurochemistry and other body functioning. For example, a recent study reports that the fatty acid, gamma-linolenic acid, may aid in the conversion of certain brain metabolites blocked by heavy alcohol use, while also

appearing to play a major role in eliminating alcohol cravings. [30]

Food sensitivities, a far more complex and controversial area, have been identified as a possible contributing factor in alcohol cravings. [31] Dietary exposure of alcoholics to their food "allergens" has reportedly produced strong physiological cravings for alcohol in test subjects. [32] Many such allergic foods are theorized to produce cerebral reactions that can cause measurable changes in "emotional" symptoms. Further research is obviously needed in the field of alcoholism rehabilitation to confirm this theory.

One additional condition reported among alcoholics is hypoglycemia. [33-34] The symptoms of hypoglycemia reported resemble those referred to as the "dry drunk," including: grogginess, sleepiness, depression, extreme fatigue, food cravings (e.g. alcohol, sugar, etc.), mental confusion, etc. It was with these theories in mind that a pilot effort was initiated at an alcoholism rehabilitation program to test whether using biochemical restoration techniques in conjunction with related counseling efforts could improve the treatment outcomes of alcoholics.

The Study Population

The study was conducted at the Health Recovery Center, Inc., a private outpatient clinic in Minneapolis, Minnesota. Of the 300 clients (selected in an "every-other" pattern) seen between 1981-1984, 100 were regularly followed up. The only criteria for rejecting a case was (a) an incomplete data in a client's file, or (b) regular misuse of a non-alcohol drug. Client's ages ranged from 17 to 80 years. Sixty-eight of the 100 subjects were male. One client could not be contacted at the six-month follow-up while five could not be reached at final follow-up.

Methods

The basic format for treatment followed a six-week outpatient design. All clients were assessed in a number of biochemical and psychological ways at entry. Two written instruments, the Hoffer-Osmond Diagnostic Test (HOD) [35] and the Symptometer of Common Alcoholic/Hypoglycemic Symptoms [36] collected information on moods, physical symptoms, and a variety of behaviors. [61, 62] (The HOD is a self-administered 145 item diagnostic tool having perceptual, depression, and paranoia scales. The client responds "yes" or "no" to a variety of conditions dealing with perception and self-awareness. [62] The Symptometer is a 50-item instrument, administered by a trained counselor, which assesses a wide variety of physical experiences, including cravings, fatigue, confusion, visual disturbances, tremors, etc.

Each subject had a physical examination, a 6-hour glucose tolerance test, and diet analysis. Food sensitivities and allergies were assessed by 4-day fast, followed by provocative challenges of single foods. Sensitivity was indicated by symptoms observed following each challenge in addition to pulse monitoring. Pulse rates were taken 5 minutes before each challenge, and at 5 and 20 minutes following each challenge. A change of at least 12 beats per minute, up or down, suggested sensitivity. A physician performed further testing with post medical training in environmental medicine. These tests included sublingual and subcutaneous provocation, and RAST (IgE). Additionally, nutrient levels, standard chemistry profiles, and thyroid functioning tests were completed.

"Detoxification" included a multifaceted approach emphasizing non-drug nutritional substances such as sodium ascorbate, gamma linolenic acid, glutamine, and amino acids. Amounts of these substances required close monitoring to adjust for client individuality. Initial dosages: powdered sodium ascorbate [Bronson] 4-5 grams every three hours during waking hours (modified for effectiveness, or if bowel tolerance is reached); glutamine –1 gram, three times a day (or increased if cravings persisted); gamma-linolenic acid –6 capsules daily of a combination of 45 mg gamma-linolenic acid [Efamol], 365 mg cis-linoleic acid, and 13 IU vitamin E. Additional supplements of vitamins, minerals, essential fatty acids, and selected amino acids were instituted when suggested by laboratory results. These amounts were monitored and adjusted individually for each client throughout treatment.

Diet and lifestyle were altered to eliminate refined sugar, caffeine, nicotine, other highly refined products (i.e. white flour, white rice, "junk" foods, etc.), and reactive foods and chemicals. Allergies were treated by avoidance, use of neutralizing/desensitizing drops, and antioxidant nutrients. As a client's immune system improved, nutrient supplements were gradually decreased.

The weekly therapy program consisted of daily group meetings, weekly one-hour private sessions with a biochemical counselor, and similar weekly sessions with a psychological counselor. Family members attended one family group meeting each week and a weekly lecture, in addition to individual sessions as needed. Counseling involved a rational-emotive approach designed to help clients understand and intervene in specific thinking patterns and self-talk. If left uninterrupted, this could lead to abandoning their new lifestyle and eventual resumption of drinking. (This, indeed, proved to be the pattern for those who returned to drinking.)

A program of regular exercise was required including four half-hour periods per week of physical activity—walking, jogging, sports, etc. Although this was a minimum, more was permitted.

The general pattern of recovery showed some stabilization during the first three weeks, with cravings subsiding, alertness increasing, and moods becoming less labile, and decision making improving. These indications suggested progress. Counseling sessions became more productive. For most clients, at the end of six weeks self-reported loss of alcohol cravings and significant reduction in other previous symptoms suggested clients were ready for discharge and less outpatient assistance. A six-month aftercare program, consisting of voluntary weekly meetings, contributed to assisting their new lifestyle.

Systemic *Candida Albicans* proliferation became an issue of concern during this study. The proliferation of the *C. albicans* yeast is purported to have a variety of adverse effects on physiological functioning, including suppressed immunity (which purportedly increases the chances of allergic responses to foods and chemicals occurring). Yeast foods, certain sugars, and alcohol are claimed to exacerbate symptoms when this mycological problem is present. Mycostatin, an antifungal medication, and a "yeast-free" and carbohydrate modified diet was recommended when *C. albicans* was suspected. [37-39] In each case, a physician carried out diagnosis and treatment of suspected C. albicans infection.

Staff did follow-up, via phone interview. In most cases, the client was interviewed, while in several a near family member responded. Because of an established staff-client relationship and the client's insights into the physiological nature of their alcoholism, it is believed that the responses were honest and accurate. Questions asked covered current chemical use patterns, status of problems originally associated with chemical use, maintenance of any diet revisions (e.g., caffeine, sucrose, nicotine use, nutritional supplementation, exercise, quality of outside activities, and personal support). Answers suggesting a regression to previous lifestyle habits prompted interviewers to probe further about the stability of their abstinence.

Results

Of the 100 subjects, 98 were known to have at least one alcoholic relative, with 48 reporting alcoholism on both sides of their family. Two were adopted; natural parents were unknown. A number of other studies (of twins, and other adoptees) show similar results suggesting a strong

genetic component to alcoholism. [40-43]

Sixty clients had been through one or more conventional treatment programs (amassing a total of 98 among them). Of these 60, 12 had entered abstinent, and gave depression as the reason they again sought treatment; six were suicidal. Also reported were severe alcohol cravings, crying spells, abrupt and frequent mood swings, anxiety, tension headaches, and exhaustion.

Abnormal glucose metabolism was present in 92% of the clients sampled, based on five-hour glucose tolerance tests (GTT). Symptoms exhibited by subjects at nadir included grogginess, sleepiness, trance-like states, depression (felt like crying), extreme fatigue, mental confusion, lack of concentration, etc.

Mineral status for some essential and toxic elements was analyzed by hair trace element analysis using sub-occipital hair. Chromium levels were very low (<05 ppm) in 91 of 98 subjects sampled. Zinc was low (<160 ppm) in 43% of the sample. Calcium and magnesium levels were low (<300 ppm, <30 ppm) in 40% of subjects.

While many were long-term alcoholics, indications of liver damage was not common; only ten had elevated SGOT readings; one had a high bilirubin; and six had abnormal alkaline phosphatase readings. High histamine levels were present in 12 clients, while three had low histamine levels.

Evidence of food allergy was present in 73% tested (n=100). Most common foods were: wheat (58%), cow's milk (50%), beef (22%), corn (22%), hen's eggs (14%), and peanuts (14%). Of 80 clients tested, chemical sensitivities were present in 70% and hydrocarbons (i.e. natural gas, gasoline, petroleum products, etc.) in 84% clients tested. Formaldehyde sensitivity was found in 30% of subjects, while 29% were phenol sensitive. Twenty-three percent reacted to cigarettes. Upon exposure to any of the above sensitivities, observed or reported symptoms included a number of severe reactions: sudden anger; bursting into tears; falling asleep; and, an inability to speak or think clearly. Twelve have changed occupations as a result of the test findings, while some have modified their environment to be freer of "intoxicating" fumes. None of these subjects have reportedly relapsed, although eleven had previously been in conventional treatment. The symptoms observed during testing for food and chemical sensitivities are summarized in Table 1.

Table 1.
Percentage Showing Symptoms
When Tested for Food and Chemical Sensitivities

Allergy/addiction Reactions	Food Sensitive (N = 73)	Chemical Sensitive (N = 56)
Fatigue, exhaustion	55%	38%
Spaciness, confusion	46%	48%
Headaches	34%	
Depression	27%	20%
Alcohol/food cravings	25%	13%
Anger, Irritability	24%	14%
Nausea	9%	

By eliminating these stressors, symptoms of years' duration were reportedly "gone." Many clients commented they could not recall such states of alertness and feelings of "stability". Symptoms of *C. albicans* proliferation were present in 25 subjects. Abnormally high depression, and schizophrenic symptoms were present in 71% of these subjects, with 52% exhibiting paranoid symptoms (Hoffer-Osmond Diagnostic Test [HOD]). At discharge, symptoms were reduced, but not eliminated. Treatment for *C. albicans* requires extended treatment beyond the six-week treatment program. Of the 25 clients with *C. albicans* infections, 20 had previous treatments, three were struggling unsuccessfully in Alcoholics Anonymous (AA), and, 21 were abstinent at final follow-up.

As stated in the opening paragraphs the persistence of many symptoms, after achieving abstinence, has been noted by several researchers. Using self-reporting, sixteen different symptoms were assessed at program entry and at program discharge. These results are summarized in Figure 1 and Figure 2.

Figure 1.

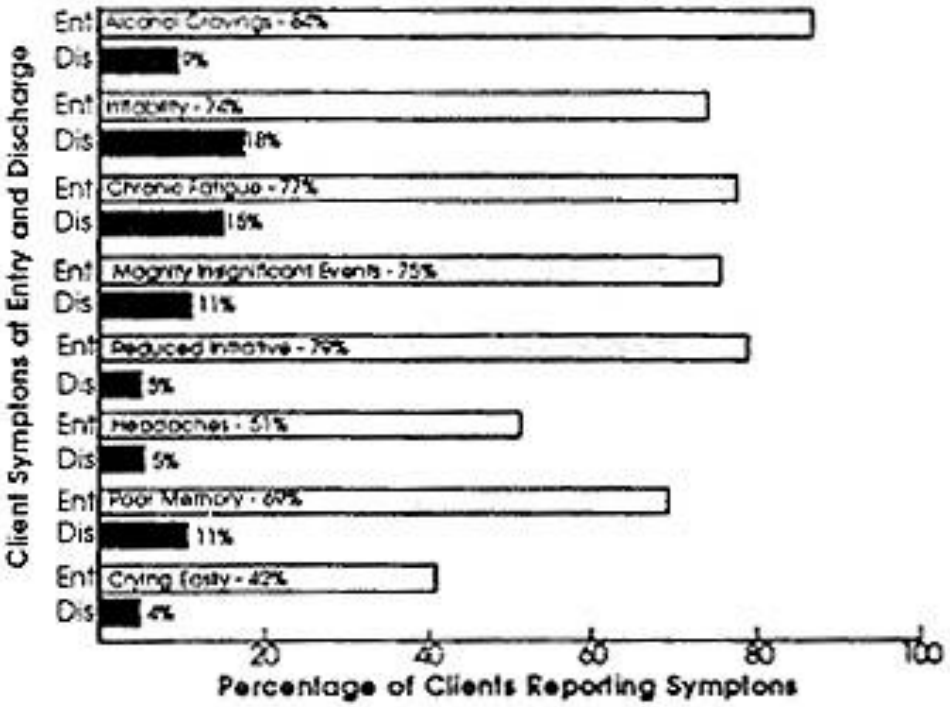
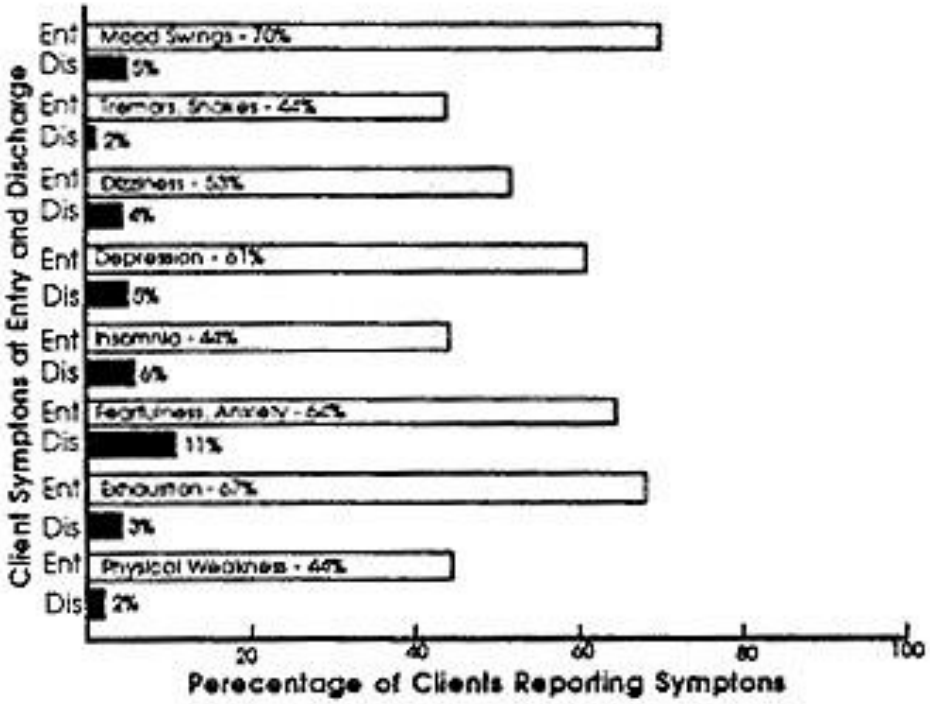


Figure 2.



Mossberg reported symptoms in all patients four to eight weeks after conventional treatment, including: anxiety, insomnia, tremors, shakes, dizziness, depression, impaired cognitive thinking, and poor memory. [15] By comparison, our study population at six weeks reported these symptoms as follows: 89% – anxiety free; 94% – no sleep problems; 98% – no tremors or shakes; 96% – free of dizziness; 95% –depression free; and, 89% – normal memory recall.

Table 2.
Diet and Lifestyle Patterns

Lifestyle Pattern	**Entry**	**Discharge**
Average percentage of dietary carbohydrates from sugar/refined products:		
Those drinking at entry	48%	0
Those abstinent at entry	72%	0
Daily coffee use (# of subjects):		
7-40 cups	43	0
4-6 cups	28	(binges) 1
1-3 cups	15	2
0 cups	14	97
Daily cigarette use: (# of subjects):		
1-4 packs	47	0
Less than 1 pack	8	
Not smoking	47	92
Moderate/frequent exercise (# subjects):	13	88
Elevated blood pressure: (# of subjects):	22	2

Lifestyle plays a key role in stabilizing brain and body chemistry. The changes for the sample are summarized in Table 2. Six-month follow-up results for the group in this study (99 contacted) are summarized in Table 3. The lifestyle change maintenance is summarized in Table 4.

Table 3.
Six-month Follow-up Alcohol Use

92	abstinent and stable (85 continuously, 7 after a brief episode of use)
7	were drinking
1	could not be located

Table 4.
Six-month Lifestyle Change Maintenance
Lifestyle: No alcohol, sugar, nicotine, caffeine, allergy foods, ongoing use of supplements

79	successfully maintaining lifestyle changes
10	abstinent but off diet and nutrients
3	off and on lifestyle; abstinent after slips
7	drinking and off diet/nutrients
1	could not be located

The long-term follow-up results are summarized in Tables 5 and 6. At the time of the study, time elapsed since discharge varied from one to three and-a-half years.

Table 5.
Long-term (1-3 $^{1}/_{2}$ years) Follow-up: Alcohol Use

<u>81 abstinent and stable:</u>

57	continuously abstinent and stable
17	abstinent after "brief use" (see Table 7)
7	abstinent after retreating (4 were early clients with Candida, undiagnosed in first treatment)

<u>14 drinking:</u>

5	"using occasionally and improved"
9	"using regularly, no improvement." Eight with severe allergies to food and/or chemicals. All had returned to sugar, caffeine, nicotine, and allergy substances before relapse

<u>5 could not be located</u>

Table 6.
Long-term (1-3 $^{1}/_{2}$ years) Lifestyle Maintenance

Of 81 abstinent clients:

37	strict adherence to lifestyle
34	keeping most lifestyle change
10	a wide variance

Of 14 who were drinking:

3	of the "occasional" five, and
1	in the "using" group on partial lifestyle maintenance
9	off the lifestyle

1 could not be located

Limitations

The nature of our study demands reader's restraint in extrapolating them to other alcoholism treatment programs. The Center's staff was trained in combining both conventional psychotherapeutic therapies with biochemical restoration. Few alcoholism treatment programs have received this type of training. Our study population was not randomly selected, nor was there a control group receiving rational-emotive therapy alone, from the same staff.

Self-reporting is a much less reliable method for assessing abstinence than desired. Blood tests that measure enzyme reactions could have verified self-reports of abstinence, but were not utilized. Since such procedures were not employed the reader is reminded that the rates of abstinence are self-reported, and not biochemically verified.

Some authorities in alcoholism feel that recovering alcoholics are always at risk of "returning to the bottle." Although 42 months follow-up may seem adequate to evaluate the impact of our treatment, longer term follow-up may be more desirable.

Nutritional assessments were not intended to be diagnostic. For this reason assessment techniques were utilized to get an "impression" of the overall nutritional status of clients. Clients were free to pursue complete dietary and biochemical assessments during or following treatment. At such time more extensive biochemical measurements for nutritional status could be undertaken. No presumption was made that a "low" hair zinc level was indicative of zinc deficiency. However, it was noted that the trace element levels were within or outside normal

ranges for non-alcoholic subjects of similar age, gender, and race. To confirm a deficiency state for a vitamin or mineral, considerably more extensive testing would have had to be completed. It was not the intent of this project to provide such data, as this study is preliminary.

The mycological infection of *C. albicans* presents a particularly difficult problem of diagnosis. Currently, there is no definitive diagnostic test for this prolific infection. Therefore, many symptoms reported by medical mycologists purportedly associated with *C. albicans* infection were used as a yardstick to suggest candidiasis. Even the presence of *C. albicans* in stool or blood samples with high antibodies, is not diagnostic of *C. albicans* infection. It is tempting to over-diagnose based on self-reported symptoms. However, if possible, suspected problems like candidiasis should be verified by multiple diagnostic procedures.

The prevalence of hypoglycemia in alcoholics has been well established. Therefore, it was not the intent of the Center to conduct more elaborate tests incorporating, for example, cortisone measures. The results of the GTT provide a baseline of data that can be shared with the client to demonstrate possibly deranged biochemical responses. Such data can be a motivator to initiate lifestyle (e.g. dietary) changes. However, the rates of hypoglycemia reported in this paper should not infer rates of hypoglycemia for other populations of alcoholics. Without supportive adrenal function tests, etc., our GTTs provide limited endocrinological data.

Discussion

Two important results are evident from this combined alcohol treatment modality. Firstly, the high percentage of successful abstinence reportedly achieved. Secondly, the stability of the clients, as evidenced by the reduction or elimination of specific long-term symptoms compared to conventional treatment modalities. The addition of biochemical intervention seemed crucial to greatly reducing the severity of reported symptoms.

Both professional observation and client reporting showed a high correlation between loss of control over drinking behavior, and the presence of these symptoms. Our conclusion is that these symptoms are evidence that the brain-body system is still stressed and out of balance. It is only when the physical conditions producing these symptoms are alleviated, as in this study, that client health and stability is achieved.

Mortality studies of alcoholics support this premise. Alcoholics have death rates 2-3 times those of non-alcoholics. [44-47] Other reports show little difference for treated or untreated

alcoholics. [48-50] This makes sense if we acknowledge the continued presence of cravings, physiological imbalance, mood swings, depression, anxiety, etc. Left to their own resources, most people will attempt to alleviate their imbalance using whatever chemicals are available. Thus the importance of dealing with major lifestyle issues that usually goes uncorrected (e.g., smoking, highly refined/low nutrient density diets, allergies/ hypersensitivities, addictions, caffeine consumption, etc.). Older alcoholics die of heart disease, cancer, and other degenerative diseases thought to be influenced by lifestyle habits.

The role depression plays in mortality requires further exploration. Young alcoholics die primarily by "violent" means. Suicide plays a major role, as does accidental death (i.e. poisoning). Berglund followed 1,312 treated alcoholics over a 30-year period. There were 537 deaths during this period (2.6 times the expected rate). There were 88 cases of suicide and 98 other violent deaths, including 44 cases of "uncertain suicide." Twenty-five percent of the deaths were likely due to suicide. [51]

In our study, 61 clients reported depression. Twelve previously treated clients who entered abstinent all gave depression as a major reason, with six suicidal (one brought a suicide note). Only five of the 60 in the study identified depression as a problem just six weeks later. This suggests depression can be treated by specific biochemical intervention. (Neither antidepressant medication or lithium carbonate were used in the study.)

A major emphasis in this work is on a more holistic approach. Abstinence in itself, while necessary, has not been shown to produce wellness or stability. We see a clear correlation between stability and successful alteration of lifestyle. The brief drinking episodes described in Table 7 did not have the "hit-bottom-and-start-all-over" impact associated with many "slips" reported in the literature. We believe the clients' physical systems were stable enough to not completely lose control with brief use. This may have been partially due to the clients' applying the knowledge they had learned during the various counseling sessions. From our perspective we observe is that lifestyle degradation precedes the return to drinking.

Table 7.
Brief Use Descriptions

- One weekend binge after using cough medicine with high alcohol content.
- Used alcohol once on Christmas Day.

- An occasional glass of wine in past. No current use.
- One day deliberate use. Continuous abstinence now.
- Two brief uses, back on diet and nutrients.
- Two brief uses, not maintaining lifestyle well.
- A three-day period of drinking on vacation in Mexico.
- A one-day consumption of some beer.
- Deliberate one-day use "out of boredom".
- Brief use, again abstinent and on diet and nutrients.
- Two binges, both after heavy caffeine and sugar use.
- Went on a binge after abandoning lifestyle.
  Returned to abstinence and diet/nutrients; "feel great now".
- A short period of occasional beers; diet/lifestyle shaky. Brief usage two years ago.
- Brief use; long sobriety and use of nutrients/diet.
- Candidiasis infection severe for a few weeks, used sugar excessively,
  drank during this period.

A key observation that our work supports is that certain people possess specific vulnerability or "chemistry" susceptible to alcoholism. Beside the "twins" and adoption studies, and our own observations supporting that alcoholism "runs in families," we saw evidence that our clients had reactions to alcohol not present in the general population. A number of other works indicate this. Some include varying acetaldehyde production in different populations [52-54], family biological markers [55-57], and effects of ethanol on the endogenous opioid system. [58, 59]

We have observed two major types of responses. The first is "energized" with high tolerance and little after-effects (whereas the majority population becomes relaxed or sedated). This correlates with the acetaldehyde tetrahydroisoquinoline pathway. Research [58] continues to support this hypothesis (for some cases). A great deal of current discussion (not cited here) seems to recognize this type of response and drinking pattern.

A second response is becoming more significant as we continue to treat our clients at the Center. We call it the allergy/addiction response, and we see it in the 'binge" drinker. (Their first drink likely made them sick.) This person drinks somewhat randomly but often cannot control consumption when drinking. Other observations that suggest this involves cerebral effects are the

major mood and behavior changes usually associated with this kind of drinker. This client in particular usually has a number of food and chemical sensitivities. (Both of these patterns are detected by asking a number of questions about alcohol use and effect. Confirmation of these patterns could have a social benefit by helping to differentiate between true physiological losses of control and use based on choice and responsibility.) Although not within the domain of this study, we have recently become interested in what role essential fatty acid (EFA) metabolism may play, especially in the conversion of linoleic acid to gamma linolenic acid, for some genetic populations (i.e., Scandinavian, Scottish, Irish, native Indian groups).

We see an emerging relationship between chemical dependency and chronic *C. albicans* infections that requires more study. When this proliferative fungal disturbance is suggested, client history reveals a variety of symptoms and complaints associated with alcoholism.

We are not aware of other programs emphasizing a similar approach. One result we hope for, is the opportunity to network and share results with others following similar avenues of investigation. For example, in 1983 Guenther reported one study at the Austin (TX) Veteran's Hospital, which confirms our impressions. It was a prospective study following recovering alcoholics who received either a nutritional or non-nutritional treatment program combined with conventional psychotherapy. [60] A six-month follow-up reported that the therapy only group had a 37.5% abstinence rate compared to the nutritional group's 81.3% abstinence rate. [60]

The present study supports the hypothesis that a program emphasizing a biochemical-based outpatient, non-drug, treatment modality will be more successful in producing long-term sobriety, than conventional therapy-only based programs. However, as these results are preliminary, controlled studies testing this approach under more rigid scientific controls are required.

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Biographical Notes

Robert A. Parker, B.E.E. (Elect. Engr.), 1964, and B.S., Education, 1966, University of Minnesota, Mpls, MN., M.Sc. Physical Science, 1972, Rensselaer Polytechnic Inst., Troy, New York.

Joan Mathews-Larson, B.A., 1976, Human Services/Counseling, Metropolitan State University., Minneapolis, MN; M.Sc., 1980, and Ph.D. 1985, School of Nutrition, Donsbach University, Huntington Beach, CA.