

Effective Treatment of Lyme Borreliosis with Pentacyclic Alkaloid *Uncaria tomentosa* (TOA-free Cat's Claw)

Executive Summary

Introduction

In a six-month prospective cohort study designed to compare the effectiveness of an alternative method of Lyme borreliosis treatment to conventional antibiotic treatment, patients receiving alternative treatment showed greater improvement based on self-reported disease symptoms, physician evaluation and clinical laboratory tests. The alternative treatment consisted of the use of Pentacyclic Alkaloid Chemotype *Uncaria tomentosa*, or TOA-Free Cat's Claw, dietary and lifestyle changes, enzymes, vitamins, minerals, detoxification herbs and body pH-balancing. Conventional treatment included antibiotic treatment as recommended by the American Medical Association.

Structure of Study

Twenty-eight patients with advanced Lyme borreliosis entered the study, one patient dropped out due to hospitalization and surgery for an unrelated pelvic tumor, and twenty-seven patients completed the study. The presence of the IgG and IgM antibodies to *Borrelia burgdorferi* and clinical evaluation confirmed each patient's diagnosis. Each person had had the disease for over 10 years, had experienced progressive deterioration and had shown very little or no clinical improvement with long-term and/or repeated courses of antibiotics.

Patients were divided into two groups, comparable in terms of symptoms, length and clinical course of the illness, demographics, socio-economic status, and compliance with the treatment protocol. Over the study period of six months, all patients were evaluated a minimum of three times: at the initiation of the study, mid-study and at the study's conclusion. Many were evaluated at additional visits (on as-needed basis) throughout the study period.

Results of the study are based on three groups of data, collected over the period of six months: self-evaluation, clinical evaluation by the physician, and immunological tests. Self-evaluation consisted of two data instruments: 1) a patient self-assessment form in which patients evaluated the severity of each of their disease-related symptoms before the study treatment protocol and periodically thereafter, and 2) the widely-used SF-8 survey which evaluated a person's quality of life as it related to health on each visit. Clinical evaluation included a physical examination, neurological assessment, kinesiological assessment, comprehensive clinical blood test, and clinical urinalysis. Immunological tests included serological tests for the presence of the IgG & IgM antibodies to *Borrelia burgdorferi* (the Western Blot test) and other infectious agents, including *Babesia microti*, *Ehrlichia*, *Mycoplasma*, *Chlamydia*, *Helicobacter pylori*, Cytomegalovirus, Epstein Barr Virus, Herpes Simplex Virus type 1 and 2, and Coxsackie Virus.

Treatment Protocol

Experimental Group

All prescription antibiotics were discontinued before the start of the study, and during the study most other pharmaceuticals were dramatically reduced or discontinued. During the first two weeks of the study (weeks 1 and 2), treatment included general body detoxification through diet and supplements, but did not include TOA-free Cat's Claw. Patients began taking TOA-free Cat's Claw in the third week at 600 mg 3 times a day, continued to increase their daily dosage by 600 mg a day, and by the end of the fourth week all patients were taking 1800 mg 3 times a day for a total of 5400 mg a day (weeks 3 and 4). This dose and supportive remedies were continued for the next 4 weeks (weeks 5 through 8). During the following two weeks (weeks 9 and 10) TOA-free Cat's Claw was continued at 5400 mg a day, but supportive remedies were used only minimally. After the tenth week, most of the supportive remedies were discontinued, and TOA-free Cat's Claw was continued at 3600 to 5400 mg a day for an additional 16 weeks (weeks 11 – 26).

Control Group

During the 26 weeks of the study, all patients in the control group continued treatment with antibiotics and/or symptomatic medications in accordance with their treatment protocol.

Results

The following table summarizes the results of the patients' self-reported symptoms at the first and last visits for both the experimental and the control groups. Each patient rated their severity of symptoms based on a scale of 0 to 10. The means for the first and last visits and the ratio of these two means are reported for each group. For the experimental group, compared to the control group, the mean for each symptom except joint pain and peripheral neuropathy was slightly higher at the beginning of the study, and significantly ($P < 0.05$) lower for all symptoms at the end of the study. Additionally, the percentage of patients who improved was higher in the experimental group for each symptom, with statistically significant difference ($P < 0.05$) for all neurological symptoms and fatigue.

Symptoms	Experimental Group				Control Group			
	First Visit Mean	Last Visit Mean	Ratio First/ Last	% who improved	First Visit Mean	Last Visit Mean	Ratio First/ Last	% who improved
Fatigue	7.92*	4.17*	1.9	83.3*	7.25*	5.67*	1.3	58.4*
Joint Pain	7.64*	4.10*	1.9	60.0	7.88	6.13	1.3	55.6
Muscle pain	7.43*	4.29*	1.7	71.4	7.24	5.63	1.3	62.5
Digestive Disturbances	7.00*	2.73*	2.6	81.8	6.06*	4.06*	1.5	62.5
Cognitive Dysfunction	7.50*	3.75*†	2.0	100*	7.00	5.81†	1.2	70.0*
Memory Impairment	8.25*	3.25*	2.5	87.5*	6.50	5.20	1.3	50.0*
Limbic Encephalopathy	6.80*	3.45*	2.0	80.0*	6.07	4.97	1.2	57.1*
Sleep Disturbances	8.25	4.25	1.9	75.0	5.67	4.00	1.4	33.3
Headache	7.00	4.25	1.6	66.7	6.17	6.17	1.0	33.3
Peripheral Neuropathy	7.05*	3.60*†	2.0	83.3*	7.25	7.25†	1.0	0.0*

*Statistically significant difference ($p < 0.05$ by paired t -test) between first and last visits

†Statistically significant difference ($p < 0.05$ by paired t -test) between Experimental and Control groups last visits

Physicians evaluating patients' clinical status at the end of the study period found that the experimental group showed significantly ($p < 0.05$) higher overall improvement in clinical conditions than the control group. Eighty-five percent of individuals in the experimental group showed marked improvement in their overall clinical conditions, and nobody worsened. No patient in the control group demonstrated as much improvement. One patient (7%) in the control group showed moderate improvement, while the rest showed only slight improvement (43%), no change (29%), or a worsening of their condition (21%).

The dynamics of changes in clinical symptoms during the study period for the patients' first, middle, and last visits and the rate of their improvement (in percent) demonstrate earlier (within the first 10 weeks of study) and greater improvement in the patients of the experimental group, than of the control group. Over the entire study period, the rate of improvement in all clinical symptoms was much higher in the experimental group (from 2.2 to 3.6 times), than in the control group, being the highest for all neurological symptoms (memory impairment – 3.6 times; cognitive dysfunction - 2.7 times; limbic encephalopathy - 2.7 times) and digestive disturbances (2.7 times) (Figure 1). Within the first period of study (10 weeks), the patients of the experimental group showed some improvement in clinical symptoms during the 2-week detoxification period. Substantial improvement in patients' clinical symptoms occurred with the use of TOA-free Cat's Claw, starting within the 2-week dose adjustment period, progressing during the 6-week period of full dosage therapy, and progressing further or leveling during the 16-week period of using TOA-free Cat's Claw in individualized dosage with no other supplements (Figure 2).

The SF8 Survey data for the patients' first and last visits demonstrate substantial positive changes in the patients' quality of life in the experimental group, compared to the control group. In the experimental group, there was lower impact of the patients' physical and emotional health problems on their physical, social and routine daily activities and social activities with family and friends, as well as decreased severity of the patients' emotional problems and bodily pain, and higher energy level (Figure 3). By the end of the

study, 85 percent of patients in the experimental group rated their overall health in general as “better” or “much better”, compared to one year ago. The SF8 Survey data for the patients of the experimental group, analyzed on a monthly basis during the study period, demonstrated progressive positive changes and steady improvement in the patients’ quality of life concurrently with their clinical improvement (Figure 4).

During the entire study period, the majority of the patients’ routine clinical blood test indexes (including all indexes of the comprehensive metabolic panel, CBC, WBC differential) did not demonstrate major differences in their values and/or unusual patterns of their value distribution in the patients of the either group. But there was some improvement in various indexes, more visible in the experimental group. The most noticeable changes during the study period were in the lipid profile indexes: pre-study Triglycerides, Cholesterol and LDL were significantly elevated beyond the normal range in the majority of patients of the both groups. Over the study period, the positive changes in the lipid profile indexes (decreased Triglycerides, Cholesterol and LDL, increased HDL, normalization of the HDL/LDL ratio) were more substantial in the patients of the experimental group, than of the control group.

Isolated slight elevations in the Liver enzymes (SGOT and SGPT), possibly related to the Herxheimer reaction, in three patients of the experimental group and in two patients of the control group, decreased to the normal level faster (in 1-2 weeks) in the patients of the experimental group, than of the control group. The serum Albumin level, while within the range (2.9 to 5.0 G/DL), had the value distribution pattern within the upper half of the optimal range in all patients of the both groups during the entire study period. Four patients in the experimental group and four patients in the control group were slightly anemic with low RBC, Hemoglobin and Hematocrit at the beginning of the study. All four patients of the experimental group had multiple co-infections with Mycoplasma, Chlamydia, Cytomegalovirus (CMV), Epstein Barr Virus (EBV), Herpes Simplex Virus (HSV) type 1 and 2; all these patients improved progressively and steadily in all indexes. Four patients with mild anemia in the control group had co-infections with Ehrlichia (HME type), and one of them - additionally with Babesia Microti; all of these patients showed slight improvement by the end of the study. About half of patients in the both groups had WBC elevated at the upper limit of the range, mostly at the expense of relative or absolute Monocytosis and /or Lymphocytosis in the experimental group, and a slightly higher percent of Neutrophils in the patients of the control group.

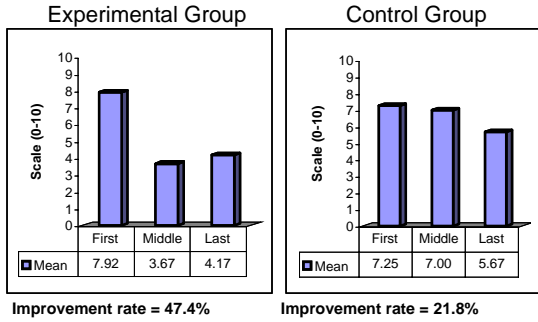
At the beginning of the study, in both the experimental and the control groups about half of patients (46% and 43% respectively) had co-infections with Babesia microti, Ehrlichia (HME type), Mycoplasma (of various types), Chlamydia pneumonia, *Helicobacter pylori*, CMV, EBV, HSV type 1 and 2, and Coxsackie virus, confirmed by the presence of the IgG & IgM antibodies to these infectious agents in the patients’ serum. The patients of the experimental group had a higher number of co-infections (mostly, with 4 to 7 of these pathogens in each case), compared to the lower number of the same co-infections in the patients of the control group (mostly with 1, and no more than 2 to 3 of these infectious pathogens in each case). This fact undoubtedly contributed to more severe clinical symptoms and worse health conditions in the patients of the experimental group at the beginning of the study.

Initially, all patients in both groups were seropositive to *Borrelia burgdorferi* (Bb) by the IgG and/or IgM antibody in the Western Blot Test (by the CDC and/or ILADS criteria). At the end of the study, 85% of patients in each group became seronegative to Bb by the IgG antibody in the Western Blot Test, with some quantitative and qualitative differences between the groups in the patients’ Immune Response. The patients of the experimental group demonstrated comparatively higher activity in the production and wider diversity in the number of the bands to various Bb surface proteins than the patients of the control group. These differences can possibly be considered as a result of the artificial activation of the patients’ immune response (previously suppressed and/or modulated by chronic Bb infection) while using TOA-free Cat’s Claw as a powerful immunomodulator and a strong natural herbal antibiotic.

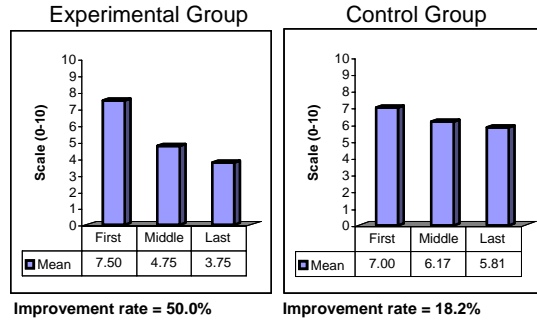
The results of the study demonstrate that the Alternative method of treatment, including the use of Pentacyclic Alkaloid Chemotype *Uncaria tomentosa*, is a safe and efficient method for improving the health and quality of life in patients with Chronic borreliosis, and surpasses the effectiveness of standard antibiotics for the treatment of this condition.

Figure I: Changes in Clinical Symptoms and Rate of Improvement Experimental and Control Groups

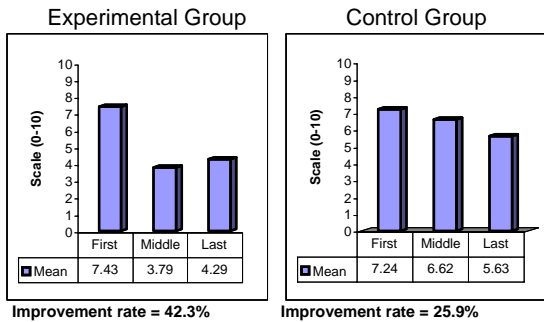
Fatigue



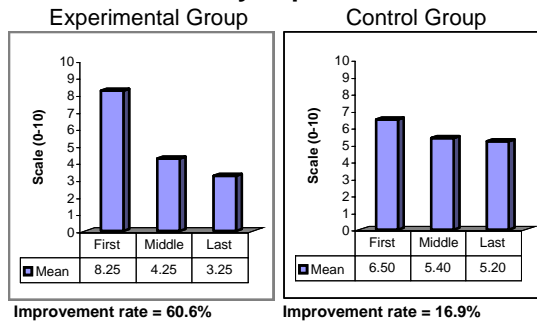
Cognitive Dysfunction



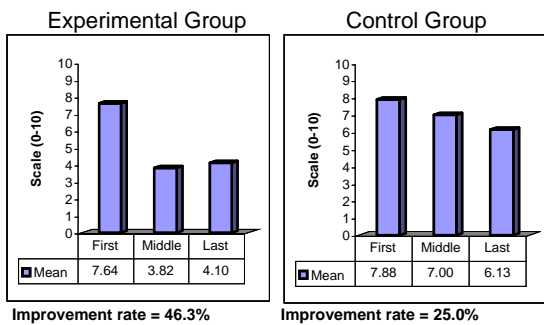
Muscle Pain



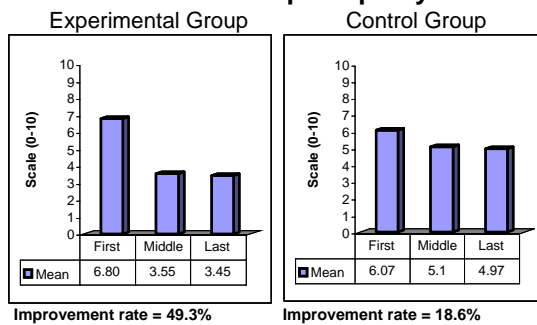
Memory Impairment



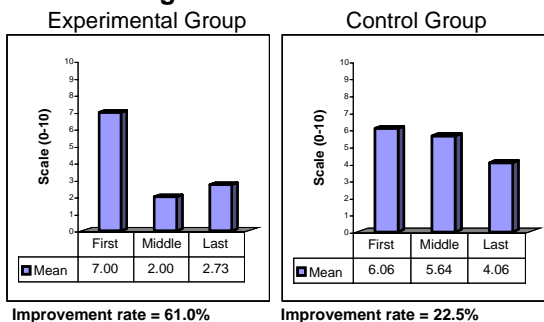
Joint Pain



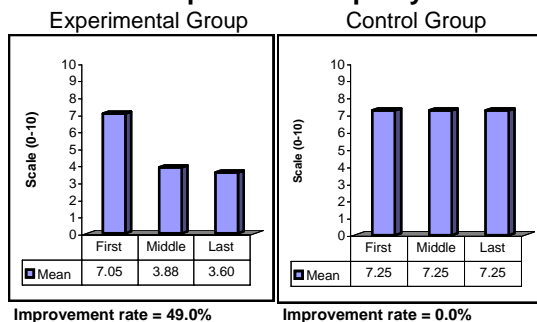
Limbic Encephalopathy



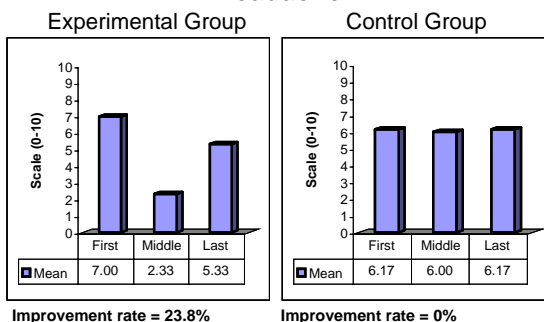
Digestive Disturbances



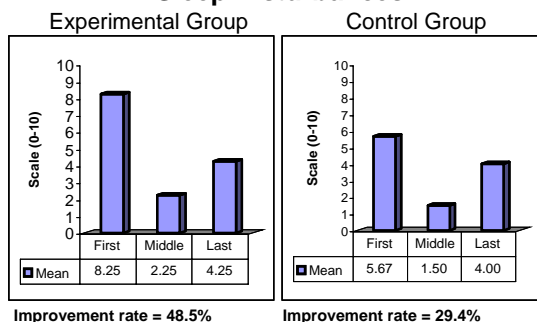
Peripheral Neuropathy



Headache

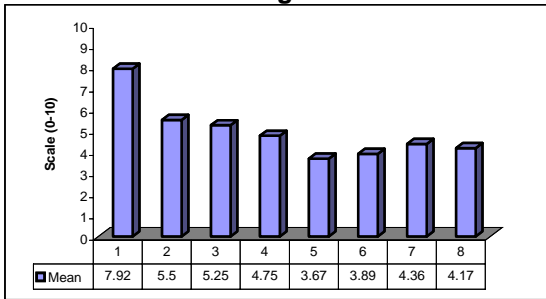


Sleep Disturbances

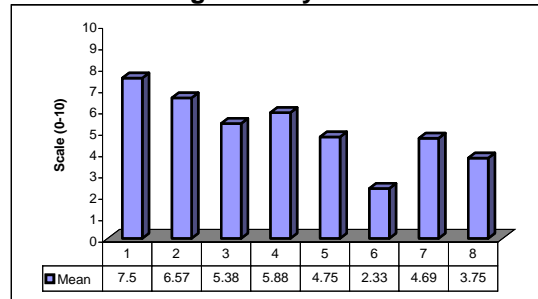


**Figure 2: Dynamic of Improvement in Clinical Symptoms
Experimental Group**

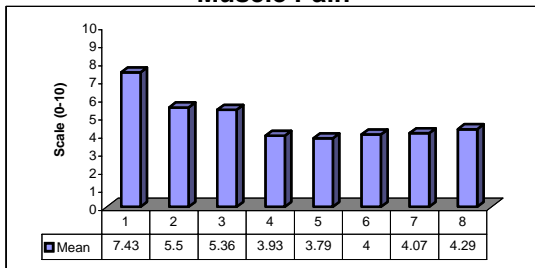
Fatigue



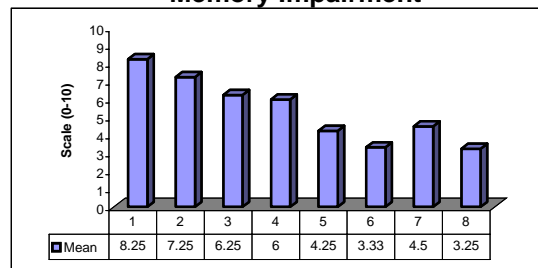
Cognitive Dysfunction



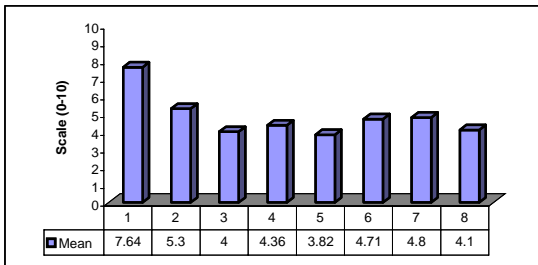
Muscle Pain



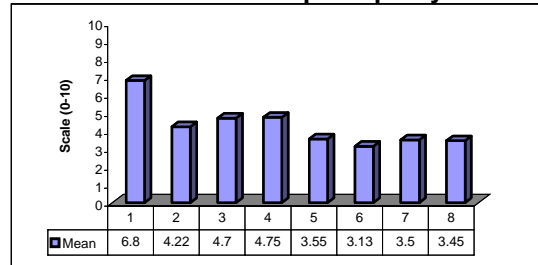
Memory Impairment



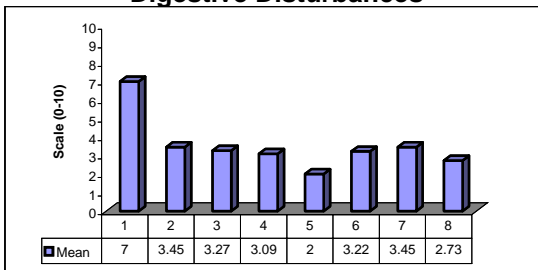
Joint Pain



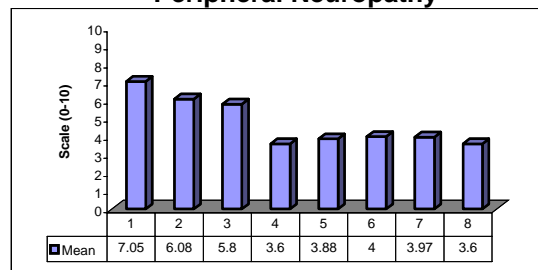
Limbic Encephalopathy



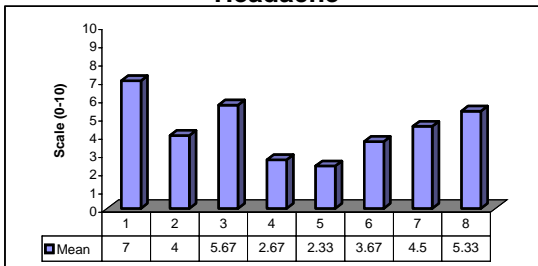
Digestive Disturbances



Peripheral Neuropathy



Headache



Sleep Disturbances

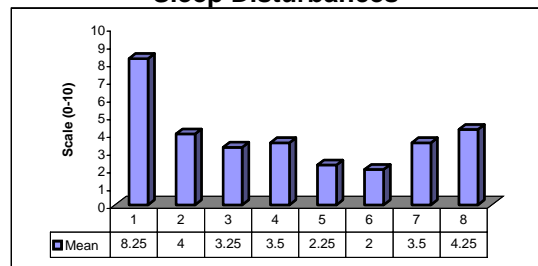
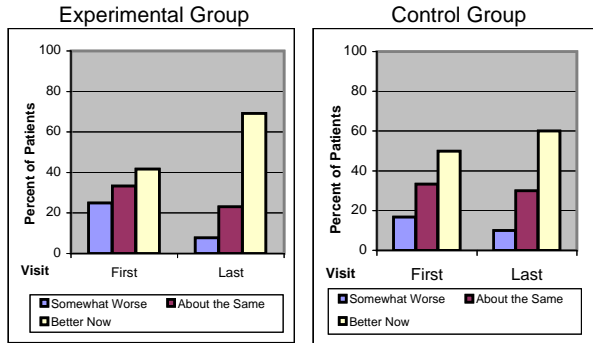
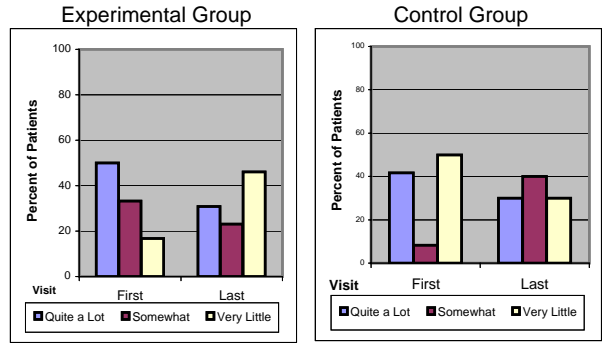


Figure 3: SF8 Survey Data, First and Last Visits Experimental and Control Groups

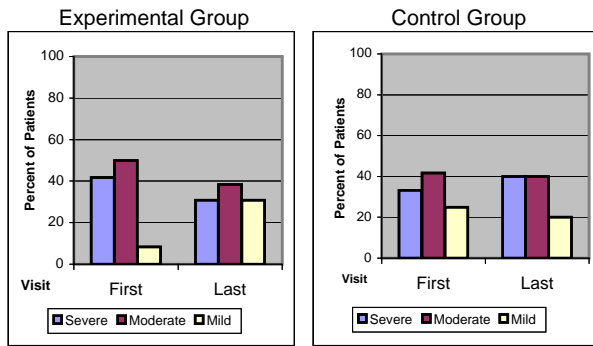
Patients' Health in General Compared to 1 Year Ago



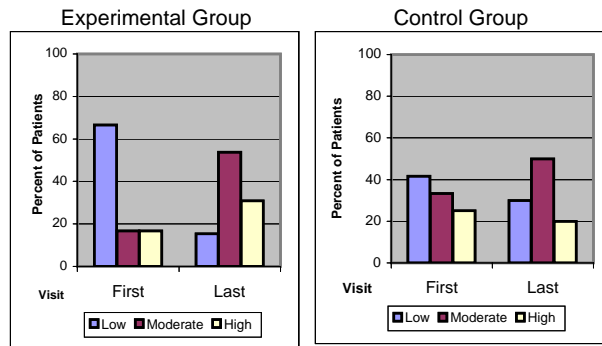
Physical Activities Limited by Physical Health Problems



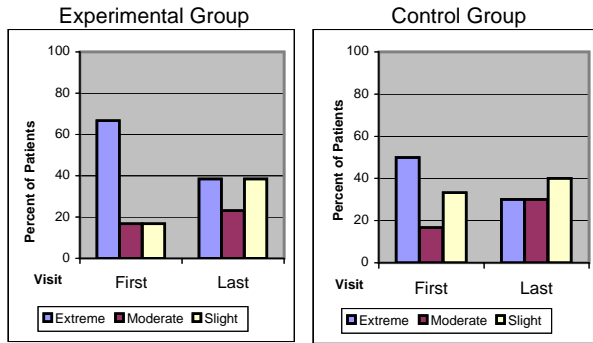
Patients' Bodily Pain in the Past 4 Weeks



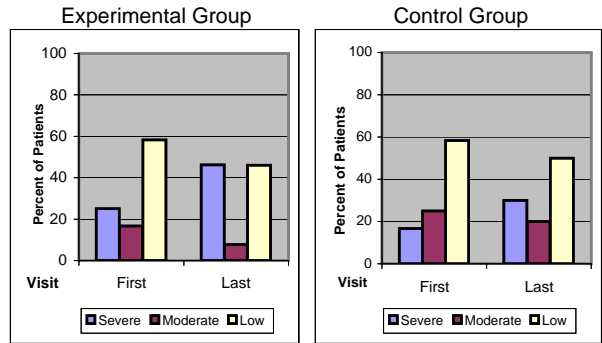
Patients' Energy Level in the Past 4 Weeks



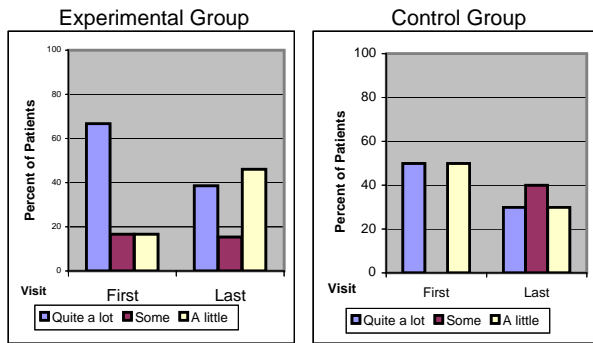
Severity of Patients' Emotional Problems in the past 4 Weeks



Impact of Patients' Emotional Problems on Their Daily Living



Difficulty Doing Daily Work



Impact of Patients' Emotional or Physical Health Problems on Their Social Activities

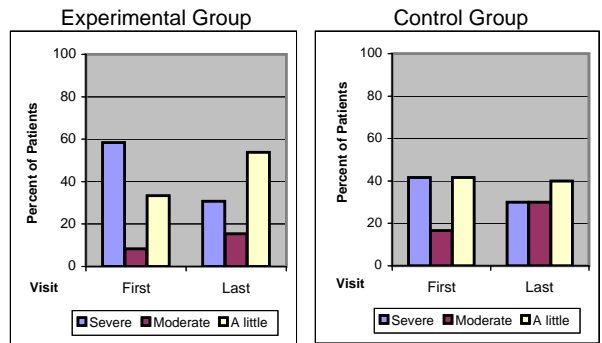
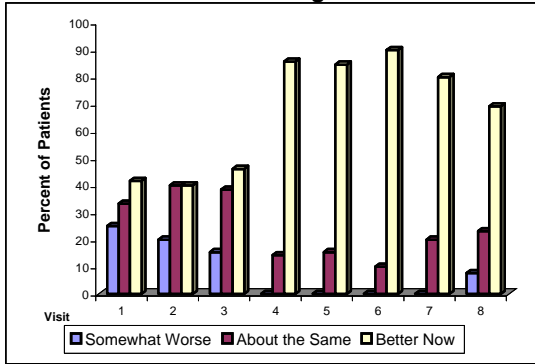
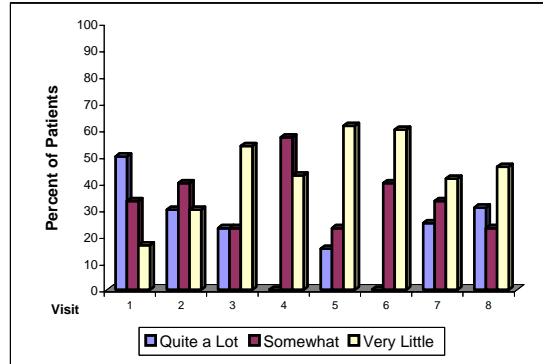


Figure 4: SF-8 Survey of Quality of Life Indicators Experimental Group

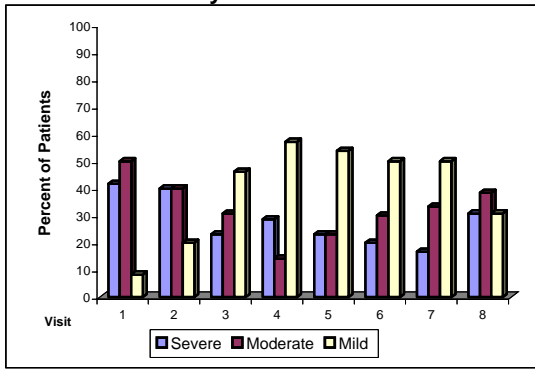
Patients' Health in General Compared to 1 Year Ago



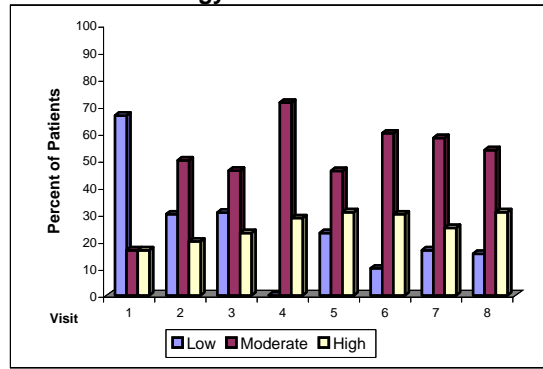
Physical Activities Limited by Physical Health Problems



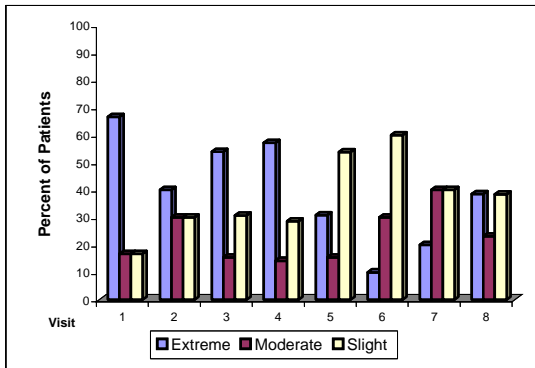
Patients' Bodily Pain in the Past 4 Weeks



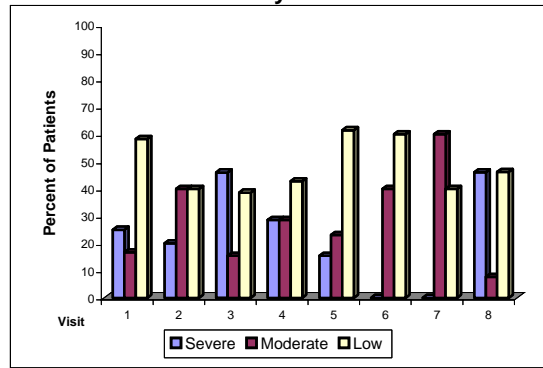
Patients' Energy Level in the Past 4 Weeks



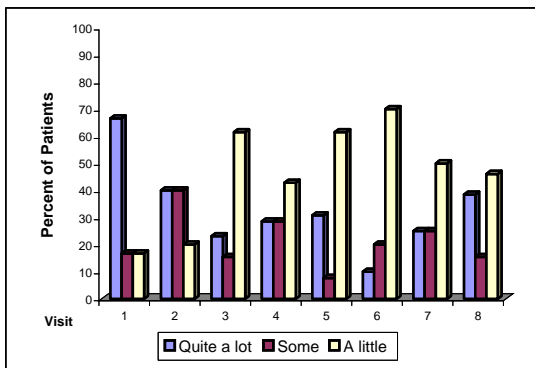
Severity of Patients' Emotional Problems in the Past 4 Weeks



Impact of Patients' Emotional Problems on Their Daily Activities



Difficulty Doing Daily Work



Impact of Patients' Emotional or Physical Health Problems on Their Social Activities

