

Improvement in Depression Following Reduction of Upper Cervical Vertebral Subluxation Using Orthospinology Technique

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ABSTRACT

Background: It has been long speculated that chiropractic interventions may affect mental health problems. One such intervention, an Orthospinology technique to correct the occipito-atlantoaxial subluxation complex using the Grostic procedure, has been anecdotally noted to improve depressive symptoms.

Methods: Consequently, 15 adults were selected by their treating chiropractors as both clinically depressed and having an upper cervical subluxation, then treated with this intervention in 3 private practice settings in the southern United States. These participants were administered the Beck Depression Inventory

II prior to an a Grostic correction of the upper cervical complex, as well as post-procedurally.

Results: A paired t-test demonstrated significant improvement in depression test scores ($t=3.96$, $df=14$, $p<0.001$).

Conclusions: The data supports the hypothesis that the orthospinology technique to correct the occipito-atlantoaxial subluxation complex using the Grostic procedure may relate to reduced depressive symptoms.

Key words: *Orthospinology, depression, occipito-atlantoaxial subluxation, upper cervical, Grostic, chiropractic*

Introduction

The effects of chiropractic treatment on mental health variables have not been extensively studied, despite the increasingly recognized relationship between mind and body. Historically, interest in chiropractic as a mental health intervention commenced in the early 1920's. At that time, there was great optimism about chiropractic's role in treating such disorders. In fact, two major chiropractic psychiatric hospitals functioned successfully for nearly thirty years in Davenport, Iowa. Unfortunately, both hospitals closed in the 1950's, and most patient documents, including data meant for a seven-year follow-up, were destroyed. W. Heath Quigley, administrator at one of these hospitals in the 1940s, wrote clinical observations suggesting the success of chiropractic treatment on various mental illnesses, and there is some documentation supporting the fact that treatment results in these institutions were as successful, given the times, as those of comparable state psychiatric facilities.^{1,2,3} For example, in one report the total admissions for one year was recorded as 72 patients with 39 discharged as "socially restored"—including patients diagnosed with such severe disorders as schizophrenia and psychotic depression.¹

Since the pioneer days of chiropractic, numerous studies have demonstrated that a plethora of ailments may result when the vertebra are askew—and subsequently improve when they are

adjusted⁴. Several of these studies linked chiropractic adjustments to reduction of mental health problems, leading to the formulation of this study's hypothesis, namely that chiropractic orthospinology may benefit individuals suffering from depressive disorders. Kessinger & Boneva, for example, conducted a study reporting significant improvements in neurocognitive function in an upper cervical treated group.⁵ Goodman presented a case study of a nine-year-old female with an ADD diagnosis. After treatment of the Occipito-Atlantoaxial Subluxation Complex, symptoms reduced dramatically. She was neither taking prescription medication nor undergoing psychological intervention during the treatment period observed.⁶ Similarly, Aguilar, Grostic & Pflieger recently conducted a study that attributed upper cervical adjustment of the atlas to improved functioning in autism.⁷ The success of upper cervical care on these disorders suggests that depressive disorders may also benefit from adjustment of the atlas.

One study similar to ours, conducted in 1975 at the Psychoeducational and Guidance Services in College Station, Texas, concluded that chiropractic treatment was effective in reducing symptoms common in a wide range of learning and behavioral dysfunctions, and in fact was 20% to 40% more effective than commonly used medications.⁸ Limitations of this study, however, included a small experimental group ($n = 12$), lack of specificity in regards to the chiropractic procedures used, and imprecise descriptions of which part or parts of the spine were adjusted. This study concluded that "chiropractic treat-

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ment is a largely overlooked instrumentality which appears to be highly effective in the treatment of children with learning and behavioral problems” (page one)⁸ and it is thought these results may be extrapolated to clinical depression as well.

In addition to these few studies connecting the fields of psychology and chiropractic, there is a robust folk tradition suggesting a possible beneficial connection. For example, the cliché “not having their head screwed on straight” is often used to refer to individuals with psychological problems. While we know that the human head does not “screw on,” it is attached to the spine in a very delicate and unique way. The neck’s narrow diameter makes this area one of the most confined localities in the human body. This area contains the medulla’s extension, the spinal cord, jugular veins, carotid arteries, vertebral arteries, the thyroid gland, lymphatics, pharynx, larynx, the trachea, and large muscles.⁹ It is the most ambulatory and delicate vertebrae in the entire spinal column. About the size of a finger, the fragile spinal cord passes from the brain through the ring-like, atlas-axis vertebrae to the spinal column to which flow millions of mental impulses. There are no interlocking bones attaching the skull to the spine. The atlas and axis, accompanied by muscles and ligaments are solely responsible for joining the head with its brain to the rest of the central nervous system. Since clinical depression typically involves both cognitive (mind) and neurological (body) problems, the possibility that upper cervical adjustment may benefit some individuals with depressive disorders was considered.

Consequently, it was hypothesized: Orthospinological correction of the occipito-atlantoaxial subluxation using the Grostic technique will reduce symptomatology in depressive persons with this disorder. Specifically, a “chiropractic orthospinologist” refers to a specialist within chiropractic who adjusts the atlas (also known as the C1 vertebrae) to correct the occipito-atlantoaxial subluxation complex. This procedure is based on the research of Dr. B. J. Palmer and Dr. John F. Grostic. “Subluxation” is the term used to refer to a misaligned atlas and axis (Eriksen¹⁰). “Depressive symptomatology” refers to the 296 series of the Diagnostic and Statistical Manual of Mental Disorders (4th ed.) classification of unipolar depression and bipolar depression.¹¹

Materials and Methods

Participants

Fifteen participants completed this study. Eight females and seven males with a mean age of 43 were recruited from private chiropractic practices in North Carolina, Georgia, and Alabama where they were regular patients. The participants were selected based upon previously self-disclosed information related to depression noted in their medical history file. To be included in the final sample, all subjects were required to be at least eighteen years of age and to evidence a minimum level of depression and possess the occipito-atlantoaxial subluxation complex. There was no reward offered for participation in the study and no distinction in selection based on gender, race, or socio-economic class.

Apparatus

To assist the chiropractic orthospinologists in making the occipito-atlantoaxial subluxation diagnosis, X-rays were taken

of the subject’s upper cervical region. When adjusting the participants, the orthospinologists used the KH4 Orthospinology Instrument that gently shifts the upper cervical vertebrae toward its original position. The instrument administers about eight pounds of concentrated pressure below the patient’s earlobe and does not require the practitioners’ direct touch.

Psychological Measure

In order to measure the baseline level of depression and any post-treatment changes, the Beck Depression Inventory II (BDI-II)¹² was used. The BDI-II is a 21-item self-report instrument used to measure the presence and severity of depression in persons 13 years and older. Each item consists of four statements arranged in increasing severity about a particular symptom congruent with the DSM-IV criteria for depression. This is one of the most widely used psychological measures and is considered standard in many clinics and hospitals for establishing clinical depression¹². This measure was chosen for its brief administration time, clinical sensitivity, previously demonstrated high reliability and validity, and extensive use by other researchers. In addition to the BDI-II, participants were also asked to complete a brief customized questionnaire including relevant identifying and background information, such as self-reported level of depression and pain and any current psychological treatment.

Design

A simple before-and-after treatment survey method was used. This study’s independent variable is the Grostic procedure performed by a board-certified chiropractic orthospinologist, while its dependent variable is the level of depression. To decrease the possibility of placebo effect, the treating chiropractors limited their communications with their patient during the procedure; used the orthospinological instrument to apply the Grostic technique, making it possible for adjustments to be made strictly by instrumentation, without any physical touch from the practitioners; and refrained from simultaneously using heat, massage or other relaxation or therapeutic methods.

Procedure

Before participants reviewed and signed consent forms for participation in the study, radiological equipment was used to diagnose the occipito-atlantoaxial subluxation complex. The chiropractors then administered the BDI-II and questionnaire to participants. This was followed by a correction of the occipito-atlantoaxial subluxation complex using the Grostic technique. An X-ray was taken for a second time taken to confirm the correction. After a period of two weeks, the patient was re-examined and confirmed to be free of the complex and re-tested using the BDI-II and questionnaire.

Results

The mean score on the BDI-II for the participants before the chiropractic intervention was 17, and after the intervention it was 8. The difference between these mean BDI-II scores is 8.73 with a standard error of 2.21. A paired *t* statistic, computed as 3.96 with 14 degrees of freedom, was tested for statistical significance, yielding a one-tail probability of .0007. Regarding participants’ depression, it should be noted that two participants worsened, two participants showed only minor improvement,

while eleven participants experienced marked improvement with treatment (Figure 1).

Discussion

This study offers a number of strengths over many past efforts. For example, a specific procedure (the Grostic method using instrumentation instead of a manual approach) was employed and adjustment was strictly limited to specific vertebrae (C1). Such precision allows for better replication and generalization of findings. In addition, the amount of human contact was minimized to decrease the likelihood that any improvement observed would be due to a placebo effect (though such effects can never be ruled out completely).

Regarding this study's limitations, the sample size used is small. It should be mentioned that the initial intent of this effort was for it to be a pilot study—except that the findings were so robust, they are now deemed worth reporting. Replicating the study with a larger sample would greatly increase the power of statistical tests, as well as provide more reliability to the findings. In addition, due to the small sample size, there was no attempt to formally examine whether pain or any other variables possibly related to depression could have been reduced by the chiropractic intervention. Furthermore, though the BDI-II is unofficially recognized as the “gold standard” of depression measures, it is a self-report measure that is subject to distortions and subtle biases (such as the ordinary desire to project one's self in a socially desirable fashion). Unfortunately, there are no scientifically objective (e.g., physiological) measures of depression currently available.

Any future replication or extension of this work should therefore consider using a larger sample size and control for a possible spurious relationship between the intervention and depression that could be caused by reduced pain or other factors. In addition, two or more different self-report approaches to increase the convergent validity of the dependent variable's measurement would be desirable, as would use of another method besides self-report such as an estimation of the level of depression by a significant other. Finally, the current study employed a quasi-experimental design. However, an even more precise experiment with a distinguishable experimental group and a control group, using double blind procedures, could provide an even greater degree of confidence in the findings.

Though considerably more research is necessary to adequately bridge the fields of chiropractic and mental health, and despite the small sample size and other limitations in this study, the improvement in depression scores noted is very unlikely to be the result of chance alone. This suggests that, though there are many treatment approaches for clinical depression, chiropractic may also be a viable treatment option. Our position is that this would be best seen as adjunctive to current psychological and medical interventions at this point but, with further research support, chiropractic could become recognized as a possible treatment of choice for depression since side-effects are virtually nonexistent (in contrast to medications) and intervention is relatively swift (in contrast to psychotherapy).

This research tested and supported the hypothesis that a chiropractic orthospinologist's correction of the upper cervical complex reduced depressive symptomatology. While it would

be irresponsible to claim that a correction of the upper-cervical subluxation will reverse years of psychological trauma or all types of clinical depression, based on the results of this study, there is reason to believe that upper cervical procedures could benefit a percentage of the depressed population. We must remember, however, that causes of clinical depression lie in many areas: psychological trauma, spiritual trauma, cognitive distortions, lack of social adjustment, genetics, chemical imbalance, physiological imbalance, birth defects, accidents, influence of illicit or prescription drugs, alcohol use, and numerous others. Since chemical and psychological treatments for depression (no matter how effective they might be) never affect all individuals to the same extent, the same should be expected of chiropractic.

Conclusions

This study's results provide support for the hypothesis that a positive relationship exists between a correction of the occipito-atlantoaxial subluxation complex and a reduction in depressive symptoms in some people. More specifically, the Grostic technique performed by board-certified orthospinologists on the atlas vertebrae was effective in reducing the level of depression in participants with problems in this area as measured by the BDI-II and analyzed using a paired t-test demonstrating that improvement in test scores post-intervention was highly significant ($t=3.96$, $df=14$, $p<0.001$).

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