Poster Presentations

Student Performance in the Preclinical Science Curriculum
A Comparison of Test Scores in an Academic Setting of Differing Lead Lecture and Laboratory Instructors

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Within the chiropractic curriculum, preclinical science courses are often delivered in a combined lecture/laboratory format, where didactic lecture material is reinforced weekly in the laboratory. At New York Chiropractic College (NYCC) a combined lecture/laboratory basic science course has previously been under the direction of a lead instructor with the postulation that optimal integration of subject material by the student would be maximized in that model.

The NYCC administration recognized the necessity to maintain quality in the educational experience and allow faculty to pursue professional development outside of the classroom. It has become essential to provide faculty release time for scholarly activity while maintaining a superior learning experience for students. The objective of this study was to determine if student performance would be adversely affected if the lead faculty delivered the lecture, and a trained adjunct delivered the laboratory.

METHODS

The two courses studied were a second-trimester course, Principles of Physiopathology (PH 0202), and a third-trimester course, Neuromusculoskeletal Physiopathology (PH 0304). Adjunct faculty assuming laboratory responsibilities worked for a minimum of 2 years in the laboratory under direction of lead faculty. In both courses, one group of students received laboratory instruction from leads ($n = 109$), whereas the second group of students received laboratory instruction from trained adjuncts ($n = 104$). Effects of laboratory instruction on classroom performance was evaluated using three test scores: exam I, exam II, and the final exam. A Group x Course x Exam ANOVA model with repeated measures on Course and Exam was used to reveal differences in classroom performance. Rationale for using the lecture grades for comparison was:

1. To support the hypothesis that the laboratory functions to reinforce essential concepts presented in lecture.
2. It was not possible to use laboratory grades as the lab experience and testing methods of the courses were different.

RESULTS

Although the Group x Course x Exam interaction term was significant ($p < .05$), the overall Group main effect was not significant ($p > .05$). These data indicated that laboratory instruction from lead instructors enhanced exam I performance for students enrolled in PH 0201 by 4.5 points and enhanced exam II performance for students enrolled in PH 0304 by 3.5 points. However, laboratory instruction from lead instructors did not improve overall classroom performance as indicated by the nonsignificant Group main effect. Moreover, detected improvements in test scores of 4.5 and 3.5 points for PH 0201 exam II and PH 0304 exam I, respectively, did not change students' assigned letter grades for these exams.

DISCUSSION AND CONCLUSION

Our study found no differences in student performance on lecture exams with the lead instructor out of the

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laboratory. Trained adjunct faculty delivering the laboratory material perform on par with lead instructors. From a faculty management perspective, this allows flexibility for scheduling and budgeting, and facilitates faculty development.

Flexibility in developing and staffing curriculum schedules is facilitated utilizing this model. Additionally, as we strive for a more integrated curriculum, availability of individual faculty to interact in other courses is increased. Development of professional development plans (PDPs) by faculty is encouraged and time can be allowed to implement their plans.

In addition to academic management issues, we are convinced that the quality of student educational experience was not adversely affected. The format of lead faculty members delivering lecture material with trained adjuncts leading the laboratory has been utilized for many years in basic science courses of more traditional academic institutions. The results of our study document the efficacy of this model in delivery of the chiropractic curriculum.

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Comparison of Radiographic Analysis and Clinical Outcome for Two Upper Cervical Specific Techniques

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Upper cervical specific chiropractic techniques rely on radiographic analysis to determine the line of drive for correcting misalignments of the first cervical vertebra (C1). Different techniques propose different models for how C1 moves and use different anatomical landmarks for determining its position, which in turn determines the proper line of drive for correcting its misalignment. We evaluated the laterality of C1 as determined by two upper cervical specific techniques, the Blair technique and the Grostic procedure. We also compared clinical outcomes for patients adjusted according to the two methods.

METHODS

Twenty subjects were recruited for the study. Each subject received a thorough history, physical examination, chiropractic examination, and radiographic examination including lateral cervical, nasium, base posterior, and left and right condylar views. The radiographs were analyzed independently according to the Blair technique and the Grostic procedure to obtain a listing for the misalignment of C1. Subjects were randomized to receive either Blair or Grostic care for 4 weeks. After the first Grostic adjustment, a post nasium radiograph was obtained to determine the amount of reduction of the C1 misalignment, and changes were made in the adjustment vector if indicated. Subjects completed a Rand SF-36 survey before and at the end of 4 weeks of care, to assess general health and quality of life.

STATISTICAL ANALYSIS

Laterality of C1 was compared between the two methods using the kappa statistic. Values for SF-36 obtained at weeks 0 and 4 were compared using paired *t* tests. One-way analysis of variance (ANOVA) was used to compare differences between the 0- and 4-week values for SF-36, seeking an effect of chiropractic technique. A significance level of .05 was used, with appropriate adjustment for the number of comparisons.

RESULTS

For 11 of the 20 subjects (55%), laterality was the same between the two techniques (kappa = 0.08). Statistically significant improvements were observed between SF-36 scores obtained at the beginning of the study and after 1 month of care for Role Emotional and Mental Health subscales in the subjects adjusted by the Blair technique. No significant differences in change from baseline scores were observed between the two techniques.

DISCUSSION

The articular model for determining the laterality of C1 used in the Blair technique does not make any assumptions of structural symmetry in the upper cervical area. The presence of asymmetrical structures in this area could explain the

differences in laterality of C1 as determined by the two methods.

CONCLUSION

The Blair technique uses an articular misalignment model for determining the laterality of C1, whereas the Grostic procedure is an orthogonally based method. In this study, agreement of C1 laterality between the two techniques was only slightly more than would be expected due to chance alone. We conclude that the determination of C1 misalignment is highly dependent on the model used to describe the normal anatomical relationship of the bony structures in the upper cervical area.

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Journal Reading Habits of Chiropractic Students
A Needs Assessment Survey

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There is currently a great deal of literature which states that health care providers are not using the best resources and skills to answer clinical questions. Chiropractic students appear to be at a distinct disadvantage for problem solving to answer clinical questions because of an education lacking in clinical experience. It is our belief that by increasing chiropractic student and practitioners' ability to answer clinical questions, they will become better health care providers. In order to design a study aimed at changing the reading habits of chiropractic students, it was first necessary to access their current reading habits. The objective of this study was to determine the current journal reading habits of chiropractic students.

METHODS

A survey comprised of a two-page questionnaire was developed and administered to the 3rd, 4th, 8th, and 11th quarter classes of a 13-quarter program at Palmer College of Chiropractic–West during May of 1999.

RESULTS

One hundred and fifty-one students completed the survey. Of those surveyed, 34% were female and the majority (82%) were under the age of 29.

Ninety-five percent of the students responded that they spent 3 hours or less on average per week reading health care journal articles or abstracts; 72% reported that they did not have a subscription to any journal.

Thirty percent felt undecided or not confident when asked how they felt about knowing where to find journal articles and abstracts, 42% felt undecided or not confident about their ability to choose good-quality relevant articles, and 51% felt undecided or not confident when critically appraising an article.

The most common times that students noted they found time to read were during breaks, after school, and during lunch. Sixty-five percent of the students reported that a lack of time prevented them from reading more. The students retrieved most of their articles and abstracts from the actual journal in a library and on the Internet. They planned on getting journal articles from subscriptions, the Internet, and libraries once they were in practice.

DISCUSSION

Two of the problems with the survey were that the word "journal" was not defined to mean health care-related journals, and that students sometimes responded inconsistently. Differences between those students in lower quarters and those in higher quarters were a change in why the students read journals and a change in what would help them read more.

CONCLUSION

Five major issues to address from this survey were identified:

1. A feeling of lack of time to read journal articles
2. Underutilization of the Internet and libraries as a source of articles and abstracts
3. A lack of confidence in knowing where to get information

4. A lack of confidence in selection of relevant articles
5. A lack of confidence in critique of journal articles

The information collected in this survey will be used to conduct a randomized controlled trial designed to change the reading habits of chiropractic students. The intervention in this trial will focus on the five noted major issues identified from the survey. It will include time-management skills, knowledge about sources for information, and increasing confidence in choosing and evaluating articles.

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The Effect of Rib Adjusting on Tissue Oxygenation and Chest Expansion

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The objective of this study was to measure the effects, if any, of standing high-velocity, low-amplitude (HVLA) chiropractic rib adjustments on vital lung capacity as measured by chest expansion during forced inspiration and on tissue oxygenation.

BACKGROUND

There appears to be limited documentation regarding any adjusting procedures and their effects on tissue oxygenation. The only study found was done at Kirksville Osteopathic School in 1965. This study concluded that an increase in tissue oxygenation, even if the oxygen levels were within the normal range, is obtained after osteopathic manipulation.

Research published in Belgium examined the rib motion of dogs. The normal biomechanics of these dogs were altered by locking two ribs together and analyzing EMG activity in these muscles. Due to the nature of the rib locking, the muscle spindles should have been unable to be stretched. The researchers found that when the ribs were displaced in varying directions, EMG recorded powerful reflexive activity in the external intercostal and levator costae muscles. It was concluded that due to the quiescent state of the spindles, this reflexive activity was arising from joint mechanoreceptors. This research laid the groundwork for the justification of ensuring proper joint mechanics for proper respiration. It was also found that the magnitude of receptor discharge was directly proportional to the velocity of rib displacement. If these findings are due to the graded nature of receptor potentiation, the high-velocity, low-amplitude chiropractic adjustment may affect proprioceptive information.

METHODS

Sixty subjects were recruited for this study. The Healthdyne Pulse Oximeter 950 shines red and infrared lights through the tissue and detects the fluctuating signals caused by arterial blood pulses. The study design was a double-blind, randomized, controlled trial.

The chest expansion measurement was taken around the T-4 dermatome with the subject in the standing position. After placing the oximeter on the subject's left index finger, tissue oxygenation was read at 30-second intervals for a period of 5 minutes. The treatment (30 subjects) group received an HVLA adjustment to the involved rib. The chest expansion and tissue oxygenation was then again measured for both control and treatment groups.

RESULTS

The preadjustment sample mean oximeter percentage values for treatment (adjusted) and control (nonadjusted) groups were both 95.67. The postadjustment sample mean for the control group was 95.57. These three groups received no chiropractic intervention.

The mean preadjustment chest expansion for the treatment group was 3.02 cm and for the control group was 2.90 cm. The postadjustment mean chest expansion for the control group was 2.88 cm. These three groups did not receive chiropractic intervention.

The postadjustment mean oximeter value for the treatment group was 96.62, which supports a statistical significant

increase ($p < .001$) in tissue oxygenation. The post-treatment mean chest expansion for the treatment group was 3.84 cm, which is statistically significant at $p < .001$.

DISCUSSION

Although this study showed statistically significant increase in both outcome parameters due to rib adjustment, the authors question the clinical significance of the increase in tissue oxygenation. A future study might homogenize the subjects by choosing a specific population, such as subjects diagnosed with chronic obstructive pulmonary disease or asthma.

CONCLUSION

The results of this study support the hypothesis that the standing chiropractic adjustment does in fact increase chest expansion and blood tissue oxygenation and therefore improves function.

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The Effects of Chiropractic Care on Quality of Life of Renal Failure Patients

Robert Czajkowski, D.C., **Joseph Labriola**, D.C., **H. Dennis Harrison**, D.C., Private Practice, and **Bruce Pfleger**, Ph.D., Life University Research Center

Severely compromised kidney functioning necessitates that patients undergo peritoneal or hemolytic dialysis to artificially restore component concentrations. Hemolytic dialysis is a particularly taxing procedure for patients.

A controlled study demonstrated that patients in end-stage kidney failure could be differentiated from control group patients based on somatic manifestations and low back pain, which suggests that chiropractic care serving to remove spinal lesions could also affect kidney function. There are no current studies in the literature demonstrating the effects of chiropractic care on renal function.

The purpose of this study was to assess the impact of chiropractic care on patients in end-stage renal failure. Outcome measures include both quality of life instruments and component blood levels.

METHODS

A total of 38 patients were enrolled in the study at a hemodialysis clinic through advertising and health talks. After signing an informed consent statement, patients were randomly assigned to a chiropractic group or a wait-list control group. The chiropractic group received 4 months of chiropractic care; the wait-list group served as an initial control group before also receiving 4 months of care.

Outcome measures included surveys and blood component analysis. The Rand SF-36 Health Survey and the Beck Depression Inventory (BDI) were administered to all subjects initially and 2 and 4 months thereafter (the wait-list group filled out additional surveys at 6, 8, and 10 months). A Visual Analog Scale for pain (VAS) was administered at each visit during the care phases. Blood component analysis was performed by the dialysis center on a monthly basis.

Subjects received 4 months of chiropractic care. Radiographic films were taken to assist in determining appropriate chiropractic care as well as screen for pathology. Subjects with little bone loss received Toggle and diversified adjustments, while those with significant bone loss received Grostic instrument upper cervical adjustments only.

RESULTS

The data collection and care phases of the study began in October 1998 and ended in July 1999. A total of 27 subjects completed the study, of which 14 were in the initial care group and 13 were in the wait-list control. The mean number of chiropractic visits over the 4-month care period was 22.3 (range: 8–28). At the time of this report, data analysis is still underway. In assessing the overall effects of chiropractic care, data from both groups will be pooled. A repeated measures ANOVA design will be used to examine the survey data (SF-36, BDI), looking for a time effect during the care phase. A similar analysis will also be performed on the blood component data. A best linear fit will be determined for the VAS data, in which a negative slope would be indicative of decreasing pain. A separate ANOVA will be performed on

the initial 4 months of data, looking for a difference between the chiropractic and control groups.

DISCUSSION

This study helps demonstrate that chiropractic trials can be accomplished within a traditional medical setting. Patient compliance with the chiropractic care was excellent, with few missed appointments. The medical director of the clinic noticed increased patient compliance with the medical procedures in terms of arriving at and completing dialysis sessions. This is likely due to the desire of patients to work with the chiropractic staff.

CONCLUSION

Chiropractic efficacy trials can be integrated into existing medical facilities. Specifically, chiropractic students and doctors can provide complimentary care to hemodialysis in a medical setting. Subjects responded favorably to the clinical setting, resulting in good compliance with both forms of care.

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A Method for Consistency and Accuracy in the Diagnosis of Myofascial Trigger Points Using Manual Palpation
An Interrater Reliability Study

Lisa DiMarco, D.C., and **V. M. Sciotti**, Ph.D., New York College of Chiropractic

There are few properly controlled studies in which the myofascial trigger point (TrP) has been investigated as a clinical entity. In addition, the data reported have been inconsistent and equivocal. The purpose of this paper is to describe a protocol that combines the use of a precise three-dimensional (3-D) measurement system in conjunction with traditional manual palpation skills as a means of establishing inter-rater reliability in the localization of myofascial trigger points.

METHODS

Four faculty members from New York Chiropractic College, each experienced in the diagnosis and treatment of patients with TrPs, will participate. The clinical group will meet for a minimum of two 3-hour training/practice sessions to train in the localization of TrPs. An active release technique-certified clinician will guide the sessions. A volunteer subject will be present during the training sessions to permit the clinicians to practice and/or review the established protocol for manual palpation of soft tissue.

When the clinicians have reached consensus on the palpation criteria, a study will be carried out using healthy volunteer subjects ($n = 20$) recruited from the New York Chiropractic College campus community. An Optotrak 3-D camera system will be used to capture, on computer, the precise anatomic locations of the identified TrPs. To do so, marker clusters will be placed on the skin of each of the subjects overlying their left and right scapulae. An additional marker cluster will be placed on a probe that the clinicians will individually use to "point" to the TrPs that they have identified using the agreed-upon manual palpation skills. The Optotrak camera will record the precise 3-D positions of the markers then calculations will be performed to determine the precise 3-D locations of the probe tip, hence, the suspected locations of the TrPs in both the right upper trapezius muscle and the right infraspinatus muscle groups. The purpose of reporting the findings in two distinct muscle groups will be to determine if the consistency of identifying myofascial trigger points varies between muscles.

Statistical analyses of the data will be accomplished by establishing the degree of repeated assessments of TrPs in the two muscle groups examined in the study using the kappa statistic, percent agreement, observed proportion of positive agreement (Ppos), and observed proportion of negative agreement (Pneg). Interclinician reliability will be assessed as acceptable if a kappa value of .8 or greater is achieved.

ANTICIPATED RESULTS

It is anticipated that the study's results will validate the ability of our clinical group to reproducibly, consistently, and accurately diagnosis myofascial trigger points. As indicated by Gerwin et al., intragroup training appears to be essential to ensure that high inter-rater reliability is achieved.

In addition, our report of findings will be the first in which a precise 3-D measurement device (the Optotrak) has

been used to identify the anatomic coordinates of myofascial trigger points. In a recent pilot study conducted at our institution, we established that this methodology for locating anatomic landmarks is very reliable. Two clinicians repeatedly located the posterior processes of the T1, T2, and T3 vertebrae with average distances between measures of 4 mm, 5.7 mm, and 2.4 mm, respectively.

CONCLUSION AND DISCUSSION

In summary, the use of group training in conjunction with the ability to utilize the Optotrak imaging camera will prove invaluable as a relatively objective means by which to identify the precise anatomic location of myofascial trigger points. The controlled and reproducible diagnostic criteria established as a result of this study will be used in future studies performed at New York Chiropractic College for the purpose of describing the biochemical profiles of myofascial trigger points.

ACKNOWLEDGMENT

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Incorporating Named Techniques into a Chiropractic College Curriculum
A Compilation of Investigative Reports

Brian Gleberzon, D.C., Canadian Memorial Chiropractic College

Since its establishment in 1946, the Canadian Memorial Chiropractic College (CMCC) has predominately adhered to a diversified model of chiropractic technique in the core curriculum. However, students have consistently voiced their desire for increased exposure to and instruction in named techniques. A review of the Applied Chiropractic Department, completed in 1998, involving faculty, clinicians, and students, revealed that 87% of students are in favor of more exposure to named techniques. An assignment was designed to provide 4th-year students an opportunity to list and explain which, if any, named techniques they wanted in the core curriculum or as an elective program.

METHODS

Over a 3-year period (1996–98) a series of investigative assignments conducted by 4th-year students at the CMCC have researched a plethora of named techniques, with the purpose of determining if any warrant inclusion into the curriculum of the College. A total of 227 research assignments, investigating 19 different named techniques, have been submitted. Submitted reports include a description of the named technique (historical perspective, philosophy, and diagnostic and therapeutic methodologies) and a rationale to support the recommendation as to whether or not the technique should be included into the curriculum. Recommendations from preceding years are not disclosed prior to the submission of the student's report to avoid any potential biasing of the student's recommendations. The recommendations from the collected results have been compiled and have been examined.

RESULTS

The results reveal an overwhelming demand for the inclusion of Palmer HIO (100%), Thompson Terminal Point (100%), Gonstead (97%), Activator Methods (92%), and Active Release Therapy (80%) techniques either into the core curriculum or for the development of an elective program. Conversely, the students recommended the continued exclusion of Torque Release Therapy (33%), Applied Kinesiology (27%), and Network Spinal Analysis (25%). Students appear to be undecided about Logan Basic (62%), SacroOccipital (53%), and CranioSacral (45%) techniques.

DISCUSSION

Students were reluctant to recommend that Applied Kinesiology, Network Spinal Analysis, SacroOccipital, and CranioSacral techniques be included into the curriculum or as an elective program, not because they necessarily question the therapeutic efficacy of these techniques, but because they concluded that the philosophical approaches of these techniques were the least compatible, and would therefore

integrate poorly, with the diversified model currently embraced by the CMCC.

CONCLUSION

Demographic studies predict a tremendous upheaval of the landscape of chiropractic profession in Canada. This will be due to the continued influx of chiropractors from abroad, many of whom are trained in named techniques, and an increase in the utilization rates of named techniques by Canadian-trained chiropractors. These changes support the consideration of the Canadian Memorial Chiropractic College to either include into the core curriculum, or development of an elective program for those named techniques most compatible with a diversified model of chiropractic care.

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The Necessity of Strength Training for the Older Adult

Brian Gleberzon, D.C., Canadian Memorial Chiropractic College

Muscle strength is considered to be the most physiologically limiting factor of the older patient. The physiological benefits of exercise in general are well documented. Over the past 5 years, research has shown that exercise, particularly strength training, is not only important, but necessary for successful aging.

METHODS

A literature search was conducted. Several relevant, recent articles were reviewed along with other texts on geriatric care.

RESULTS

The literature indicates that there are many detrimental changes in the musculoskeletal system during the normal aging process. These changes include a loss of muscle mass, a decrease in the number of muscle fibers (especially type II fibers), a decrease in muscle fiber size, remodeling of the neuromuscular junction, and an increase in motor neuron size but an associated decline in muscle control.

These changes are not uniform throughout the musculoskeletal system. Certain muscles are negatively affected while others are relatively preserved. For example, researchers have determined that the quadriceps muscle atrophies to much less an extent than the biceps muscle or tibialis anterior muscle. The decline in the strength of the biceps muscle and tibialis anterior muscle can have a detrimental impact on a person's activities of daily living (ADLs) and is associated with an increase in risk of falls and subsequent fracture.

Investigation into the area of functional independence has shown that strength training can mitigate or even reverse a spiraling decline, even among the frail elderly. Measurable gains in strength can be discerned in as little as 6 weeks with resistive strength training.

Many researchers have demonstrated the relationship between strength gains and functional improvements. Functional gains include improvements in gait, gait speed, balance, a decrease in the risk of falling, and mobility tasks. Strength gain has been shown to be an effective antidepressant in depressed elders.

DISCUSSION

Traditional geriatric studies have emphasized the "Five I's." These are: intellectual impairments (dementia, delirium, and depression), incontinence (which includes the inability to toilet oneself), instability, immobility, and iatrogenic drug reactions. Strength training is a benefit to all five of the "Five I's" that challenge the older patient.

One of the major reasons that a health care provider may be hesitant to recommend to an older patient that he or she begin strength training is the possibility of injury or the detrimental increase of the physiological burden on an already frail person. However, one study concluded that the subjects who engaged in strength training were exposed to no more peak circulatory stress than that created by a few minutes of inclined walking.

Two of the most important factors involved in the adherence to an exercise program are health maintenance and social cohesiveness. This motivation for health maintenance by use of a drugless approach parallels the chiropractic paradigm. The "prescription" of exercise can be considered as primary, secondary, and, to a limited extent, tertiary prevention.

CONCLUSION

The baby boomer generation is the largest growing demographic group in North America. Persons over the age of 65 are expected to comprise over 30% of a chiropractor's patient portfolio by the year 2010. In this, the International Year of the Older Person, it seems only appropriate to inform the chiropractic profession of the importance as well as the necessity of strength training for the older patient.

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Interactive Atlas of Histology
A Tool for Self-Directed Learning, Drill, and Evaluation

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The current state of expanded medical knowledge puts great demands on student study time. In addition, the educational goal of developing the self-directed learner, who could continue to pursue knowledge on his/her own initiative, obligates educators to develop tools which enable the students to take part in their own education.

The aim of this paper is to share information regarding the development, use, and potential benefits of a new electronic instructional tool in histology. The interactive atlas of histology attempts to provide the students with a tool they can use to learn, on their own time and at their own pace, the various structural characteristics of body tissues and systems.

METHODS

The development process of this atlas involved digitizing images from actual slides through the use of a video microscope and Leica EWS 2100 software to capture and enhance the images. PowerPoint was used to further enhance and edit the digitized images and create a show of animated images and text, which require the user to respond by pressing the space bar or the left mouse button. The files within this atlas are titled using a systemic approach and are arranged to follow the sequence in the related course syllabus. The atlas was adapted for installation in the LACC's Intranet for access by students while on campus or from home.

The process for use is the following. The atlas user, after accessing the front page of the atlas, is prompted to select from a menu of topics by pressing the appropriate button displayed on the screen. This opens a file of images available for viewing by the student. The first image appears and the student can take as much time as needed to identify the image. Next, a press of the space bar or the left mouse button reveals the identity of the image. More button pressing will bring about a pointer to a structure in the image for detailed identification, then the identity of the structure. This cycle goes on until all the structures pertaining to the image are identified. Then, a new image appears.

RESULTS

This exercise allows the students to drill themselves on the identification of various histological structures in preparation for histology laboratory exams. The students also learn to differentiate between structures of similar appearances and become more powerful in discerning the differences. It basically allows the students to test themselves and evaluate how much they have learned in the process.

CONCLUSION

Some potential benefits of this atlas include the ability of the students in the pathology class to compare normal and pathological tissue structure. The atlas database could also provide the underpinning for the development of integrated programs between macroscopic and microscopic anatomy, histology and pathology, structure and function, etc. This would present a great opportunity to produce more interactive, self-directed software programs for the enhancement of students' learning throughout the curriculum.

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Teaching Emergency Procedures with Standardized Patients

Nancy J. Gour, R.N., Los Angeles College of Chiropractic

The Emergency Procedures course prepares the student for common medical emergencies that may be encountered in the prehospital setting. It includes practical skills and training in the care and recognition of cardiac, respiratory, and other medical emergencies and trauma. The course is taught over a 15-week period in which the students are introduced to a variety of emergency cases based on the objectives to include stroke, seizure, shortness of breath, diabetic emergencies, cardiac, suicide, concussion, and fainting.

OBJECTIVE

In an effort to convert emergency procedures from passive to more interactive experiences, we used standardized patients

to present cases in the emergency procedures course. Our objective was to increase student competency in emergency skills, when dealing with potential or actual emergencies. Students interact with standardized patients to identify and manage emergencies.

DESIGN

Participants include 7th-trimester students and standardized patients. A standardized patient is an individual who has been carefully coached to portray a specific clinical condition when given details of the history and physical examination. The students work in groups of 3 or 4. Students are preassigned to be a Doctor, Recorder or Caller (if applicable), and Observer. Each encounter is videotaped for additional formative feedback to enhance discussion.

MATERIALS

Course materials include a Protocol Medical Screening checklist and are discussed throughout the course. Each protocol lists management for a specific medical condition. Each emergency case is carefully trained. The standardized patients not only act out their case, but provide feedback in a separate checklist to provide consistency. Following each encounter and feedback session, the students are asked to complete a survey.

RESULTS

Ninety-one percent of the students rated the encounters as a very valuable experience, 8% reported it was somewhat valuable, and 1% rated the encounter not valuable.

SUMMARY

The course objectives were met in a more realistic and active method and a good foundation for emergency skills was provided. Faculty agreed standardized patients are an effective resource, when emphasizing life-saving skills. Students benefit by observing peers handling emergencies with live patients rather than paper cases. Students were appreciative for the opportunity and the practical experience with clinically relevant instruction.

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Self-Evaluation Study on the Introduction of Outcome Assessment Tools into a Chiropractic Teaching Clinic

Lawrence Hansen, D.C., Life University

The importance of the role of outcome assessment tools (OAT) to the chiropractic profession cannot be overstated. Chiropractic, along with every other form of health care delivery, is being pushed to demonstrate successful clinical outcomes using cost-efficient care methods. The ability to accurately measure patients' progress throughout treatment is going to be critical to each chiropractic practice and to the entire profession.

An understanding of what outcome assessment tools are, how they are implemented into a practice, and the many different and valuable ways that the results can be utilized needs to be a vital element of any chiropractic educational experience. The effectiveness of educating the chiropractic clinician about outcome assessment tools as they begin their outpatient clinical experience will be evaluated by this study.

METHODS

The clinic practicum is an 11-week, 2 hour/week, small-group class which covers a variety of topics, designed to ease the transition from student clinic to outpatient clinic. Previous academic experiences (history taking, physical examinations, technique protocols, x-ray analysis, and laboratory tests) are reviewed, current clinical outpatient protocols are explained and discussed, and the real-world elements of marketing and case/patient management are introduced.

During the case/patient management portion of the class, two small groups ($n = 16, n = 13$) will be introduced to a variety of well-known, valid OATs. There are:

Neck Pain Disability Index Questionnaire
Revised Oswestry Chronic Low Back Pain Disability Index Questionnaire
Roland Morris Acute Low Back Pain Disability Index Questionnaire
General Pain Disability Index Questionnaire
SF-36 General Health Status Questionnaire
Algometry Testing

The questionnaires will be reviewed and discussed, proper methods of utilization into a practice will be explored, and the clinical, practice-building, and research implications of outcome assessment tools will be explained. Information

regarding the use of spinal algometry will also be made available to the groups. At the end of the session, the clinicians will be encouraged to utilize their choice of OATs with their current and future patients. If a particular musculoskeletal complaint is not noted, the clinicians will choose between the general pain or the general health questionnaire. Patients who exhibit marked pain upon palpation will be excellent candidates for algometry testing.

RESULTS

Evaluation will occur in several different ways. At the end of the session (October 1999) the participating clinicians will be polled concerning their opinions on the effectiveness of the practicum and the relevance of the topics that are covered. Some immediate feedback will be available at this time. As these clinicians progress through the clinic, a log of their clinical experience is maintained by their faculty advisor. Usage of the OATs by the clinicians will be tracked in their clinic logs and evaluated during and at the end of their clinic experience.

DISCUSSION

Patient satisfaction has nurtured and sustained the chiropractic profession through its first century. The fact that it works, and that our patients appreciate what we do for them, is at the very foundation of chiropractic's existence. Unfortunately, control of one's health care decisions has been wrested from the patient into the hands of insurance companies, employers, and managed care companies that are demanding more than just satisfaction. They demand cost-effectiveness and measured results. Chiropractic students will need to have the tools to meet these demands if they are going to survive into chiropractic's second century. By placing these tools into their hands at the height of their enthusiasm, I believe we will help establish a new generation of outcome-based chiropractors.

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Pre- and Postadjustment Supine Leg-Length Estimation

Roger Hinson, D.C., and **Bruce Pfleger**, Ph.D., Life University Research Center

Asymmetry of supine leg length is used as an indicator of upper cervical neurological involvement in several chiropractic techniques and is thought to reflect tonic imbalance of pelvic and lower limb musculature secondary to cervical CNS involvement. An earlier study reported excellent inter- and intraexaminer reliability of supine leg-length measurement among experienced practitioners. To date, however, no studies have examined the effects of chiropractic intervention on supine leg measurement.

METHODS

Six experienced upper cervical practitioners served as examiners for this study. Examiners were asked to perform leg checks as they would in everyday practice, and to estimate leg-length differences to the nearest $1/8$ inch. No information regarding the composition of the subject group was provided, to minimize examiner bias.

Two groups of five subjects were recruited for the study. The experimental group consisted of current chiropractic patients, while the other group served as a control. Subjects wore similar clothing, including khaki pants, white socks, and bowling shoes. To blind both examiners and subjects, a curtain was placed across the room so that only the subject's feet and ankles were visible to examiners. The study consisted of two sessions for leg-length measurement, separated by a period in which the experimental group received an upper cervical adjustment by an independent clinician. Subjects were placed on tables in a random order, with two subjects in the adjusted group measured twice during each measurement session.

RESULTS

Data were first examined for the 10 subjects combined both before and after the adjusted group received chiropractic care. ANOVA revealed no significant across-doctor differences in the predata ($p = .106$), but did show a significant assessor effect in the postdata ($p = .008$). Further analysis demonstrated two types of error associated with LLI estimation, which we will term "shift error," in which there was disagreement as to which leg was short, and "magnification error," in which the magnitude of the inequality differed. Still, across-doctor differences were small: 27% of the pairwise assessments were the same, 67% were within $1/8$ inch, and 87% were within XX. Within-doctor measurement differences calculated from the pre/post nonadjusted group were even smaller.

To assess the impact of the chiropractic adjustments, LLI measurements made before and after the adjustment phase

were compared. Four of the five subjects in the adjusted group had reduced LLI estimations following adjustment, whereas only one of the five in the control group had a similar reduction. In pooled data, LLI was reduced by 32% in the adjusted group, 7.1% for the nonadjusted group. *t* Tests showed that reductions within each group were not significant nor was there a significant difference across groups.

DISCUSSION

The significant differences in LLI estimation across doctors appear to be systematic. Since the doctor could only see the feet and ankles, it might have been difficult to align the feet with the rest of the body, thereby introducing a "shift" error described above. A reference rule might also reduce the magnification error seen.

CONCLUSION

The six doctors differentially determined supine leg-length equality in a group of 10 subjects. Though LLI estimates were statistically different across doctors, the differences were generally small: roughly two-thirds of all comparisons between pairs of assessors were within $\frac{1}{8}$ inch. Differences in test/retest assessments for the same doctor/patient combination were similarly small. Spinal adjustments resulted in a decrease in LLI in the experimental group. The LLI in the control group decreased as well, but to a lesser degree. Further study utilizing a larger sample size is planned.

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The Results of a Randomized Controlled Clinical Trial of Chiropractic Care Versus Drug Therapy for Subacute Low Back Pain

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Low back pain is a major concern of health care providers because of its debilitating nature and its high prevalence in our society. It is estimated that 60%–80% of the general population will suffer from low back pain at some point in their life and that 20%–30% suffer from it at any given time. Previous research has suggested that chiropractic care can be effective in management of low back pain. The purpose of this study was to test the relative effectiveness of specific chiropractic management compared to drug therapy for 150 idiopathic subacute low back pain subjects.

METHODS

Our aim was to enroll 150 subjects, recruited by advertisements. Subjects qualified if their pain duration was 2–6 weeks, with no prior episode within 18 months. Exclusion was based on having chiropractic care within 18 months or the presence of severe health concerns such as malignant or progressive diseases, spondylitis, osteoporosis, or postsurgical low back syndrome.

After signing an informed consent, subjects were randomly assigned to one of three groups. The adjusted group received chiropractic adjustments and placebo medication. The medication group received medication and placebo adjustments. The control group received placebo adjustments and placebo medication.

Each subject received chiropractic and medical examinations, the latter of which included Schober's test, one of the outcome measures for the study. Other outcome measures included the Oswestry Disability Questionnaire, the Visual Analog Scale for Pain (VAS), and the Modified Zung Index. These were outcome measures selected by a committee for the World Health Organization (WHO) studying low back pain management. The outcome measures were administered at baseline, at 2 weeks, and at 4 weeks.

Chiropractic care consisted of a combination of specific upper cervical adjustments and full-spine adjustments. Placebo adjustments were designed to mimic true adjustments but not cause a change in osseous alignment. Subjects attended eight clinical visits over 2 weeks. Drug therapy involved a combination of daytime and nighttime muscle relaxants. Placebo medications appeared identical to true medications. Subjects in all groups received analgesics, and utilization was an additional outcome measure. Each subject received an instruction sheet and medication log.

RESULTS

The data collection phase ended July 8, 1999. Over a period of 3 years, 2,570 telephone interviews were performed. As of July 8, 1999, a total of 194 patients enrolled in the study and 157 patients completed the 2-week protocol.

Currently, data are being compiled. An independent statistician will perform an analysis providing descriptive and inferential statistics. A one-way ANOVA will be performed on baseline vs. 2-week data and baseline vs. 4-week data, looking for a difference across groups (interventions). If a group effect is seen, follow-up *t* tests will show which group or groups are significantly different.

DISCUSSION

Acute low back pain often subsides on its own, while chronic low back pain is very difficult to manage. Our goal was to examine a specifically defined subset of back pain sufferers (subacute). Unfortunately, our selection process ended up excluding the vast majority of subjects who called in to our study. This meant that the majority of our resources were directed toward patient recruitment.

CONCLUSION

Defining a desired patient population as those who have low back pain of between 2 and 6 weeks duration results in a very challenging recruitment process. Additional conclusions will be made following completion of data analysis.

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A Case Report of a Sequestered Lumbar Disc Resolved through Chiropractic Manipulative Care

Michael Howard, D.C., New York Chiropractic College

The purpose of this paper is to present an interesting case study regarding a patient treated in a chiropractic college clinic setting. It is hoped that the presentation and results will galvanize the reader to consider that even the most severe levels of disc injury deserve a trial of chiropractic manipulative therapy, providing that the patient is closely monitored for any signs of deterioration.

METHODS

The patient presented to the Syracuse Chiropractic Health Center of the New York Chiropractic College with the chief complaint of low back and leg pain. He had been previously examined medically and prescribed medication. He was diagnosed with a lower lumbar disc herniation and accepted for a 4-week trial of chiropractic manipulative therapy. A MRI was performed shortly thereafter and revealed a sequestered lower lumbar disc herniation. An examination by a medical orthopedist resulted in a recommendation of surgical intervention. The patient opted to continue with chiropractic treatment. Over the course of 2–3 months, the patient was treated approximately 20 times. Treatment began initially with Cox distraction following the radicular protocol, and later included side posture diversified lumbar adjustments.

RESULTS

After approximately 20 visits over almost 3 months, the patient's back and leg pain resolved. He is gainfully employed, takes no medication, and has resumed all prior activities. Except for the initial medication which was ineffective and discontinued, the patient received only chiropractic management. The surgery, which had been prescribed, was avoided.

DISCUSSION

This case begs the question, "Which levels of disc injury respond to chiropractic manipulation and which do not ?" There is no right answer to a wrong question. The right question would not deal with the level of disc injury only, but with the initial condition of the presenting patient, and his/her progress or lack of progress while under an initial trial period of chiropractic care. Some minor disc injuries prove to be remarkably resistant to treatment, while other far more serious disc injuries, such as this one, respond completely. This case suggests that as long as the patient is not demonstrating catastrophic neurologic compromise,

progressive or irreversible in nature, a trial period of chiropractic manipulation is safe, and may well prove effective. The keys to managing the case conservatively appear to be conscientious patient monitoring, judicious application of manipulative therapy, and a responsive patient. Failure to respond favorably (partial improvement objectively and subjectively) after 4 weeks of treatment should prompt neurosurgical consult and/or further diagnostic assessment. Neurologic deterioration of the patient during that 4-week time frame should result in abortion of the manipulative trial and immediate medical referral.

CONCLUSION

For years it would seem that the criteria for disc injured patient selection for manipulative therapy was based on categorizing the extent of the lesion per Modic's classification. This case suggests that some patients with even the most severe classification, sequestration, do respond to conservative nonsurgical chiropractic management. The criteria have changed from a static classification of the anatomical lesion, to a more dynamic assessment of neurologic intactness and patient response over a reasonable period of time.

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Life in Motion
A Campus Community Fitness Challenge

Ron Kirk, D.C., M.A.(Ed), **Cadice Shepherd**, D.C., **Judy Peters**, B.V.A., and **Rick Sherkel**, D.C., Life University

The physical and mental benefits of regular physical activity are well documented in the health literature. Moderate levels of physical activity are positively correlated with longevity and reduced incidence of a variety of disorders, including heart disease, osteoporosis, and specific types of cancer.

According to the Association of Chiropractic Colleges Position Paper #1, "the purpose of chiropractic is to optimize health" and "the practice of chiropractic includes promoting health." With these concepts in mind, the Life University community participated in an 8-week physical activity challenge called Life in Motion.

In February 1999, administrators of the School of Chiropractic attended a training session (sponsored by the Governor's Commission on Fitness and Sport), delineating a corporate activity challenge. The challenge's stated purpose was to improve health, morale, communication, and teamwork within an organizational community. This program was modified and implemented as the Life in Motion Challenge in April 1999.

Principal goals of the challenge included:

1. Raising participants' health and fitness awareness
2. Increasing participants' levels of health and fitness
3. Achieving a high level of participation
4. Achieving a high level of goal completion

METHODS

Program directors, coordinators, and a key function steering committee were selected. Literature promoting activity was distributed to the campus community. Captains were appointed to motivate their units, distribute materials, and gather data. Friendly competition was encouraged.

The authors developed an eight-question survey designed to measure participants' response in several health-related areas, including: energy level, sleep quality, perceived stress, physical image, weight loss, activity levels, and fatigue. Data were also gathered on prechallenge and postchallenge activity rates. All participants were encouraged to set individualized daily and weekly activity point goals. One point was awarded for 10 minutes of sustained moderate activity. Participants were encouraged to engage in sustained moderate activity 5 days a week for 8 weeks. Individual activity calendars tracked performance. Midpoint and final activity goals completion rates were recorded and distributed through captains to the research department. Prizes and certificates of participation and goal completion were awarded to participants.

RESULTS

Three hundred thirty-three individuals (63.7% of the campus community) participated. One hundred ninety-one (57.3%) of the participants completed midpoint activity goals, and 191 (57.3%) of the participants completed final activity goals.

Using an anonymous eight-question postchallenge survey, moderate to high levels of participant improvement were achieved across a range of health and fitness parameters. Best scores were registered in the areas of improved energy (mean 1.78), positive body perception (mean 1.84),

Question	Strongly agree	Agree	Disagree	Strongly disagree	No opinion	Mean score*
1. Energy	14.4%	53.3%	14.4%	3.3%	14.4%	1.78
2. Sleep	6.7%	51.1%	22.2%	3.3%	16.7%	1.89
3. Stress	6.7%	51.1%	25.6%	3.3%	13.3%	1.99
4. Body image	10.0%	48.9%	21.1%	3.3%	16.7%	1.84
5. Body weight	7.8%	38.9%	40.0%	3.3%	10.0%	2.19
6. Activity	12.2%	60.0%	18.9%	2.2%	6.7%	1.98
7. Fatigue	6.7%	51.1%	28.9%	2.2%	11.1%	2.04
8. Future activity	8.9%	64.4%	11.1%	4.4%	11.1%	1.89

*Mean Score 1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree

improved sleep quality (mean 1.89), and decision to increase activity levels (mean 1.89).

DISCUSSION

Implementing the activity challenge was demanding, yet very rewarding.

CONCLUSION

The Life in Motion Activity Challenge engaged a high percentage of the campus community in raising their levels of physical activity and fitness. Most survey respondents reported higher levels of positive physical and mental health behaviors/perceptions after completion of the activity challenge.

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Peer Review of Teaching

David C. Lin, Ph.D., F.A.C.N., C.N.S., **Debra Reed**, D.C., and **MaryKate Connolly**, D.C., Los Angeles College of Chiropractic

To improve instruction, the Faculty Performance Appraisal (FPA) Committee of the Los Angeles College of Chiropractic (LACC) has developed a procedure for the peer review of teaching. We wish to share this instrument with other colleges.

METHODS

We obtained relevant literature from books, periodicals, and the Internet. They were analyzed for the validity, methodology, outcome, and application of the peer review of teaching. The faculty were surveyed for their preferences regarding the method of review, the number and qualification of peer reviewers, and whether the review result should be weighed into their annual performance appraisal. The return of the survey was 72%.

RESULTS

The essences of the procedure are:

1. Each college division establishes a pool of no less than four peer reviewers.
2. Reviewers cannot evaluate each other if the result of the review is to be incorporated into the faculty's FPA.
3. Reviewer's participation in the review process is counted as a part of his/her service under the FPA.
4. Reviewers should be trained.

An example of a time frame for conducting the review is as follows:

1. Fall Semester, 1999: Identify and train the reviewers.
2. January 10, 2000: Supervisor gives faculty a list of the trained reviewers from which the faculty selects two.
3. January 31, 2000: Faculty submits selected reviewers, and schedules the class for review with the reviewers.
4. February 28, 2000: Supervisor gives the reviewers the form with instruction for the review.
5. November 30, 2000: Reviewers return the review result to supervisor.
6. January, 2001: Supervisor incorporates the faculty's review results into faculty's FPA:
   A. For the two Pre-Clinic Divisions, the result is incorporated into the category of teaching performance, using the existing Appraiser Evaluation of Teaching Form, and is accounted for 20% of the teaching weight.

B. For the Clinic Division, the result is incorporated into the Appraiser Evaluation Form, and accounts for 20% of the FPA.

For the first 2 academic years, the results of the peer review should be used for improving teaching only, and should not be used for the faculty's FPA. This allows time for perfecting the instrument. In the 3rd academic year, the results of the peer review could be incorporated into the FPA should the faculty body approve it.

DISCUSSION

A peer review of teaching could be summative, formative, or both. Literature indicates that a summative evaluation alone does little to help the faculty to improve teaching. We propose a formative approach with requests for some summative data. Steps are taken to ensure that the method is reliable, effective, and efficient. Videotaping of classes has a unique potential in improving teaching, but only 22.2% of our faculty prefer this approach. The majority (61.1%) prefer that the reviewers attend their class. Peer reviewers are cautioned about the ethical and legal aspects of the review, especially if the result is to be used for promotion or reappointment purpose.

CONCLUSION

To improve instruction, a procedure for peer review of teaching has been developed. It emphasizes a formative approach, although some summative data are also requested. Whether the results can be used for promotion or reappointment purpose depends on the validation of the instrument and the approval of the faculty body.

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Clinical Curriculum Validation at a Chiropractic College
A Case Study of an Alternating Bifocal Model of Work Team Effectiveness

Brian McAulay, Ph.D., Sherman College of Straight Chiropractic

This communication describes a participant observation case study of how a chiropractic college's comprehensive curriculum project provides evidence for an alternating bifocal model of effective work teams. Using the well-developed process work team literature as a theoretical basis, this communication explores how an effective work team functioned in a cyclical manner within a series of phases as it carried out its mission. In early 1998, a Sherman College Steering Committee began a long-term project essential to the college's mission as an educational organization. Given that Sherman is the sole college in the United States whose exclusive purpose is the training of practitioners in the location, analysis, and correction of vertebral subluxations, the Board of Trustees had charged the committee with developing a document which analyzed the college's success in achieving its clinical aims. The Board, in effect, asked that a culture of evidence drive the procedures taught in the classroom and used in the clinical setting rather than a tradition-based rationale. This paper discusses that project to date, in particular dividing the project into four phases, each with two cycles.

METHODS/RESULTS

During the first phase, the Committee determined that the profession's lack of a well-articulated definition of vertebral subluxation was a major obstacle to completion of the mission. The Committee produced a coherent definition, then focused outward, forwarding their definition to the Board of Trustees for validation. The second phase consisted of a series of weekly "brainstorming" sessions, relating to protocols currently in place in the college's health center and accompanying rationales for their use. The team concluded that there were four fundamental questions to answer:

1. How is it known that someone has a vertebral subluxation?
2. How is it known where the vertebral subluxation is located?
3. If there are more than one vertebral subluxations present, how is it known which one to address first?
4. What technique should be used to correct a subluxation?

After ascertaining the centrality of these questions to the project, and consistent with this paper's alternating bifocal model, the Committee then focused outward once again, this time asking clinical faculty to list courses which addressed these four questions. The third phase focused on procedures used in the health center for location, analysis, and correction of vertebral subluxation. After extensive discussion, the Committee became unproductive. The team assigned a new member to the group the task of writing a report summarizing the first year's activities. This report presented a timetable of activities, delineating what the group had accomplished, and what remained to be done. Subsequently, the group began work on an involved flowchart of procedures requiring validation. This was the fourth phase of the project. The team noted that each box contained in the flowchart required a literature review to evaluate the efficacy of the procedure for the location, analysis, and correction of vertebral subluxation. The external cycle of this phase consisted of major involvement of the clinical faculty. Extensive reading of the literature was needed in order to investigate the validity of procedures. The committee ran training sessions to ensure faculty had skills to analyze relevant research. Faculty have begun this process, compliance has been high, and the faculty are heading toward completion of the first series of literature reviews.

DISCUSSION/CONCLUSION

This participant observation case study illustrated that chiropractic college faculty can be involved in large-scale research projects. This study found that a bifocal model of work group process was useful in explaining the effectiveness of the group.

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Curricular Evaluation through Assessment of Student Academic Achievement

Christena Nicholson, D.C., D.A.B.C.I., National College of Chiropractic

The assessment movement surrounding higher education has initiated the development of powerful instruments to evaluate the students' learning which in turn are valuable for identifying curricular strengths and weaknesses. Curricular evaluation is best performed through the assessment of student academic achievement with efficient reporting methods that provide feedback to faculty and students. A sample of two instruments that are being used at our institution for evaluation of student learning as well as a reporting instrument are included in this presentation as handouts. Also included is a resource list regarding the topic of assessment in higher education.

METHODS

Various methods of program assessment to evaluate the effectiveness of the chiropractic program in offering quality education are utilized at our institution. Major methods for assessing student academic achievement and curricular strengths and weaknesses include midterms, finals, performance examinations, a clinical competency examination, written patient management plans, national board results, and student and alumni surveys. The instrument used for evaluation of written management plans is the Primary Trait Scale (PTS), which will be included as a handout. Also included in the handout is a reporting form for documentation of outcome assessment.

RESULTS

The PTS has been utilized for two full trimesters. The first trimester was spent developing and refining the instrument to reflect the faculty's expected outcomes. The final results from the second trimester of use have not yet been assessed, although the general faculty consensus has been that the instrument provided a guideline for grading a written assignment and offered consistency among multiple evaluators. Further study of the results from this project is necessary. Students are provided with an outline of the expected written assignment as well as a copy of the PTS that will be used as an evaluation instrument which has removed the guesswork out of what faculty expect the students to produce. The Outcomes Assessment Record has been utilized to document and report outcomes of various benchmark examinations.

DISCUSSION

In order to appreciate instruments used to evaluate student academic achievement and curricular strengths and

weaknesses, several areas of importance warrant discussion, those being: anticipated outcomes, data management and recycling, and reporting and the use of assessment results. The first step in assuring that results are used to stimulate changes toward curricular improvement is to share them with department faculty members. A written report is prepared and distributed to the faculty. The results of assessment activities are used to generate discussion among the faculty and changes for improvement within the curriculum. When developing any assessment tool, it is critical that the objectives of the activity being assessed are linked to the institutional exit objectives that are in turn linked directly to the college mission statement and goals. This offers a substantial linkage of objectives that are essential for effective assessment procedures regarding students' academic achievement. Follow-up regarding curricular changes made for improvement must be tracked and documented by a group of faculty dedicated to that specific task.

CONCLUSION

As faculty continues to search for ways to improve assessment methods for student academic achievement, it is important to share what we have done, the lessons learned from the trials, and the improvement to be made. The PTS promises potential as a useful grading tool as well as a method to investigate curricular strengths and weaknesses. The reporting instrument that we have devised has been useful in documenting and reporting performance examination results at our institution and could be used by individuals, departments, and trimesters for documenting, reporting, and disseminating a variety of assessment results.

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Thermographic Pattern Analysis Using Objective Numeric Methods

Edward F. Owens, Jr., M.S., D.C., Sherman College of Straight Chiropractic

Analysis of paraspinal skin temperature patterns has been used in several chiropractic techniques as a method for detecting imbalances in the sympathetic nervous system that may be indicative of vertebral subluxation. The paraspinal skin temperature is often recorded with single- or dual-probe infrared, or thermocouple devices that provide a graph of temperature with respect to position along the spine. Interpretation of the temperature graphs varies with different techniques, but generally involves inspection of the graph by the doctor, looking for similarities in the pattern when compared to previous graphs, or deviations in symmetry of graphs. Patients are generally judged by the practitioner as being "in" or "out" of pattern based on this visual inspection. As this determination can sometimes be difficult, attempts are being made to develop a numeric method for comparison of skin temperature patterns. Such an objective comparison of skin temperature patterns will be critical in future studies of the stability of the measure, or changes that occur with chiropractic spinal adjustment.

METHODS

The TyTron C-3000 Paraspinal Thermal Imaging System (Titronics Research & Development Co., Oxford, IA) was used to collect thermographic patterns on 27 patients during the course of a blinded randomized clinical trial of the effects of chiropractic adjustment on athletic performance. The TyTron is a hand-held dual-probe noncontact infrared thermometer interfaced to a Windows-based PC computer. The TyTron is equipped with an encoded roller and photocell pickup that provides continuous information on distance along the spine as thermal scans are recorded digitally. The temperature patterns on the left and right sides of the spine can be displayed on the computer screen, along with a plot of side-to-side temperature differences. This difference graph is used most frequently in pattern analysis in the HIO or specific upper cervical toggle technique.

In a preliminary study of thermographic pattern stability, two experienced doctors of chiropractic were asked to judge the similarity of graphs recorded at successive visits. In a blinded fashion, the doctors indicated whether each scan represented a very similar, moderately similar, or dissimilar pattern.

RESULTS

A total of 76 temperature graphs were judged of sufficient quality for the comparison. The results for each doctor were tallied using a 3×3 agreement table. The percent agreement found was 38%, with a kappa calculated as $-.0008$.

DISCUSSION

The results of this informal preliminary study underscore the importance of the development of an objective measure of thermographic pattern similarity. These results also complicate the matter, in that there may be no reliable clinical measure against which to validate the numeric method. Putting this complication aside for the time being, a search is underway for the best numerical method to apply in the assessment of thermographs. Current investigations center around choosing the best computational method, based on ease of use and comparability with pattern analysis as performed by practitioners. Since blinded evaluation of pattern congruence has been shown not to be highly reliable, a consensus determination can be used to create a comparison scale for the numeric method.

CONCLUSION

The need exists for an objective numerical method to compare paraspinal thermographic scans for similarity and stability over time. Such methods should offer increased objectivity in the determination of pattern congruence and will be critical in future studies of reliability and stability of clinical measures of skin temperature. Investigations are underway to identify the most applicable and least complicated computational method.

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The Effectiveness of the Application of Auxiliary Therapies in a Clinical Setting
An Evaluation of the Teaching of Modalities

Richard P. Ruegg, B.Sc., Ph.D., D.C., Canadian Memorial Chiropractic College

Chiropractors generally employ auxiliary therapies such as interferential current, electrical muscle stimulation, and ultrasound to control pain, enhance healing, and reduce inflammation. Most regulatory jurisdictions require training in the physical therapies which is currently provided by most chiropractic colleges. The Council on Chiropractic Education (CCE) currently requires a minimum of 96 modality treatments during the clinical internship. The purpose of the study was to evaluate the use of modality, through the review of patient files and the observation of modality treatments, as a means of assessing the effectiveness of undergraduate instruction and clinical supervision in the application of the auxiliary therapies.

METHODS

Random observations of electrotherapy, laser, and ultrasound were performed unannounced, at which time the patient's diagnosis and plan of management were reviewed. The plan of management was checked for clinician approval of the designated modality and the treatment itself observed for proper setup and application. Patient identity was not recorded, thereby ensuing patient confidentiality. Nor was the treating intern or the supervising clinician identified. Results were recorded as Yes/No responses.

RESULTS

Patient files consistently provided approved diagnoses and plans of management. Virtually all contraindications were observed. However, several results raised considerable concerns. Frequently the plan of management did not include the modality employed for treatment. Often the selected intensity was not appropriate nor was the modality applied in the recommended fashion.

DISCUSSION

The results raised concerns regarding both the instruction of auxiliary therapy in the preclinical program as well as the supervision of treatment in the clinical internship. It appears as though intern modality treatments are less than effective based on the observations made. Instruction in the

auxiliary therapies could be enhanced and the supervision of modality treatments improved by the development of a physical therapies rotation that would provide superior instruction in the auxiliary therapies and fulfill, the CCE treatment requirements at the same time.

CONCLUSION

A recommendation to develop a physical therapies rotation would enhance the Canadian Memorial Chiropractic College's undergraduate and clinical teaching programs.

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Analysis of the Relationship between Educational Programming at the Canadian Memorial Chiropractic College and the Professional Practice of Its Graduates

Ron Saranchuk, Ph.D., Canadian Memorial Chiropractic College

This inquiry examines the assumption that there is a strong relationship between Canadian Memorial Chiropractic College's (CMCC) 4-year professional program, and how well it prepares its students for professional practice. Further, it is assumed that the content and time devoted to instruction are appropriate, and that there exists little "unnecessary" repetition of course content across the program. The CMCC Alumni Curriculum Development Survey was designed to clarify two principal and three supporting questions:

1. How well does the undergraduate chiropractic program prepare the students for professional practice?
   A. How appropriate was our program's course content in preparing the students for professional practice?
   B. How appropriately was time allocated across the CMCC undergraduate chiropractic program?
   C. What is the extent of "unnecessary" repetition of course content in the program?
2. What degree of consonance exists between the responses of CMCC's alumni sample and those of the current 4th-year students in addressing the principal issues?

METHODS

CMCC alumni and 4th-year students were surveyed. A descriptive survey for a cross-sectional study was developed, using a 5-point Likert Scale, with opportunities for open-ended responses.

The survey was separated into two formats for the purpose of accuracy of data collection. A 5-point sliding scale was used in collecting data about the categories of "Amount of Time in the Curriculum" and "Content Repetition," where 1 denoted Too Little, and 5 denoted Too Much. For the categories of "Preparation for Practice" and "Content of Courses," a scale was used where 1 denoted Poor, 2 denoted Fair, 3 denoted Good, 4 denoted Very Good, and 5 denoted Excellent.

RESULTS

Responses were received from 325 (52%) of 620 alumni who graduated from CMCC between 1993/94 and 1997/98 school years. Sixty-five percent ($n = 97$) of CMCC'S 4th-year class filled out the survey instrument. The wide coverage of our sample contributed to a greater validity and reliability through a larger and more representative sample.

The results were input on SPSS (version 9.0) and Corel WordPerfect (version 9) for data organization, statistical analyses, and graphic presentation.

The alumni reported that:

1. *Preparation for Practice*: All four of CMCC's departments in the Undergraduate Studies program prepared the alumni well for practice, with an overall mean of 3.49.
2. *Content*: Departments were rated at an overall mean of 3.51 ("good") for appropriateness of content over the past 5 years.
3. *Time*: The overall mean for appropriateness of time allotted to the program was 2.70.
4. *Repetition*: The alumni gave the overall undergraduate program a rating of 2.68 (somewhat too little) for the level of repetition they thought necessary.

The data from the random sampling of the 4th-year students with the survey suggests a consonance in the views between the 4th-year students and the alumni. The alumni overall have rated Clinical Sciences and Clinical Education as providing them with the highest preparation for practice, and also most appropriate course content for professional practice.

CONCLUSION

The CMCC Alumni Curriculum Development Survey is an instrument that may be used as a reliable method for

analyzing the CMCC undergraduate chiropractic program. The alumni responses to this study show that a linkage exists between education and practice. Overall, CMCC's undergraduate program prepares its students well for professional practice. The alumni have responded that the content selected, time allocated, and level of repetition is appropriate to the delivery of the program. Because this inquiry relies on the recipients of the CMCC undergraduate program for its source of data, it is an evaluation that is consumer-based, and is responsive to developing an infrastructure for program improvement based on the reflections of graduates concerning their practice experience.

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A Survey of Students' Perceptions Regarding Preceptorships

Julie A. Schrad, D.C., and **Larry L. Swank**, D.C., Palmer College of Chiropractic

Chiropractic education in the clinical sciences increasingly embraces outpatient experiences in community settings. Off-campus, community clinical experiences offered through chiropractic colleges primarily consist of two environments: college-run outreach clinics and preceptorships in private chiropractic offices. While most students receive experience in college outreach clinics, fewer students opt to participate in preceptorships. The major purpose of this study is threefold: to assess the reason(s) students choose to participate in preceptorships, to assess students' learning expectations of their preceptorship experience, and to assess subsequent fulfillment of these expectations. In addition, the study also looks at what students perceive as lacking in their on-campus clinical experience.

METHODS

Presurvey (prior to beginning a preceptorship): A 14-question self-administered anonymous survey was presented to students leaving the college for preceptorships. Of the 52 surveys distributed, 48 surveys were completed (92% response rate).

Postsurvey (after completion of the preceptorship): Upon return to the college after completion of a preceptorship, students will complete a second self-administered anonymous survey. The purpose of the postsurvey will be to assess a change in responses to the questions on the presurvey, allowing for a comparative study. Postsurveys will be administered in October 1999 and used to complete this study.

RESULTS

Presurvey responses revealed students' primary reasons for choosing to participate in a preceptorship as follows:

1. Learn about the daily operations of a private practice (79%)
2. Learn about patient management and management plans (60%)
3. Attain proficiency in providing patient education (44%)
4. An avenue for possible future employment (38%)
5. Learn about insurance policy issues and processing of claims (31%)
6. Experience the daily rewards and satisfaction of private practice (31%)
7. Learn about staffing issues—hiring, firing, staff roles, salaries, etc. (25%)

In addition, students' responses to the presurvey indicated that students did not feel they gained proficiency/knowledge in insurance processing, patient education, report-of-findings, and patient management and management plans during their on-campus clinical experience.

Several additional survey questions addressed students' learning expectations of their preceptorship. Demographics of gender and age range were also a part of the survey.

Postsurvey results will be analyzed and compared with presurvey responses to ascertain fulfillment of expectations and if confidence levels in various clinical issues change as a result of experience gained through the preceptorship.

DISCUSSION

Presurvey results indicate students' primary reasons for preceptorship participation as a mix of attaining proficiency in clinical skills with learning more about the business of private practice. It is interesting that although students indicated aspects of their on-campus clinical education in which they felt nonproficient, a little more that half discussed their clinical expectations with their on-campus faculty clinician. In addition, survey results indicated high expectations from students of their preceptorship learning experience with most having discussed these expectations with their preceptor prior to the preceptorship. All students indicated their expectation that their preceptor will be an effective educator.

Postsurvey results will be studied to ascertain fulfillment of learning expectations.

CONCLUSION

Meeting the educational needs of students in both on-campus and private practice settings is of primary concern to clinical academicians. Assessment of students' reasons for choosing participation in preceptorships and their learning expectations of preceptorships may assist program directors in developing preceptors who are better equipped to meet students' expectations. In addition, comparing reasons for preceptorship participation with perceived deficiencies in on-campus clinical training might provide the necessary insight to develop effective on-campus clinical environments, which is especially important for students who do not participate in preceptorships.

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Creating an Accurate County-Level Database of the Chiropractic Health Care Work Force for Use in Health Services Research

Monica Smith, D.C., Ph.D., **Lynne Carber**, B.S., and **Scott Morschhauser**, B.S., Palmer Center for Chiropractic Research

The availability of accurate and comprehensive health work force data is essential for conducting useful and relevant health services research and for making sound health policy decisions. A widely used source of U.S. health work force data is that compiled in the Bureau of Health Professions' Area Resource File (ARF), reported at the county level. Health professions represented in the ARF include medicine (both generalist and specialist MDs), osteopathy, dentistry, pharmacy, optometry, podiatry, nursing (RNs, LPNs, and nurse practitioners), and various other practitioners (dieticians; respiratory, inhalation, occupational, physical, and speech therapists; lab, records, and radiologic technicians). Conspicuous by its absence in the ARF is the chiropractic profession, which at approximately 50,000 active practitioners numbers the third largest of the doctorate health professions (behind only medicine and dentistry).

The goals of this project are to: determine the past, current, and future availability of U.S. chiropractic practitioner data at the state and/or county level; obtain available data from best sources and convert hardcopy data into electronic form; compare reliability across data sources; and report on the process and outcome of this project in order to clarify the limitations of currently available sources of chiropractor work force data in conducting valid and reliable health services research.

METHODS

Correspondence and follow-up, preliminary/partial data acquisition from state licensing boards and state associations, and proprietary mailing lists were used. The goals were to map chiropractors to counties using U.S. Postal Service information and to link aggregated county-level chiropractic work force data to ARF data.

RESULTS

The proprietary mailing list is a convenient source (in this case *The National Directory of Chiropractic*), but the state licensing board list is a more comprehensive list and, therefore, more desirable for use in research. Data for four states (Connecticut, Idaho, Missouri, Wisconsin) were used to correlate *National Directory of Chiropractic* counts to state board counts of chiropractors, using a simple regression model. The two sources were highly correlated (93%) and the resulting coefficient was 1.40. Examination of residuals revealed significant estimation errors.

Total state board chiropractors for all 3,105 counties in the United States in 1997–1998 were estimated at 57,396 licensees, as projected from the *National Directory* list.

DISCUSSION/CONCLUSION

Licensed DC counts from state board lists are estimated overall to be approximately 40% higher than those from the *National Directory* source, based on these preliminary findings. Visual examination of regression residuals also indicates that estimating state list counts from this particular proprietary source is error laden and may vary considerably in the magnitude and direction of that error.

A National Board of Chiropractic Examiners (NBCE) 1993 survey reported 46,196 actively licensed chiropractors based on state lists, and 10% of chiropractors surveyed in 1993 report delivering care in more than one location. Using the estimation process described above, state board counts projected from *National Directory* counts produce an estimate of 57,396 chiropractors for 1997–1998. However,

it is unknown whether these 1997–1998 estimates more accurately describe numbers of distinct chiropractors, or numbers of chiropractic practices, since a substantial number of chiropractors may be licensed in more than one state and/or practice in more than one location. Further data capture and exploration are currently underway.

By further clarifying and addressing the methodological concerns inherent in establishing an accurate chiropractic health work force data resource, this project helps ensure the comprehensiveness of health services research infrastructure and supports the conduct of relevant, valid, and reliable health services research and health policy analysis.

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The Presentation of Chest Pain in Medical and Chiropractic Ambulatory Settings

An Annotated Review of the Current Literature on Prevalence, Etiology, Diagnosis, Management, and Professional Standards of Care

Monica Smith, D.C., Ph.D., and **Matthew Ellerbrock**, B.S., Palmer Center for Chiropractic Research

Ambulatory care-sensitive conditions are those conditions that, when diagnosed and managed appropriately in the outpatient setting, can prevent unnecessary and costly inpatient care. Ambulatory conditions associated with such ”avoidable hospitalizations”include chest pain, diabetes, hypertension, and others.

A given ambulatory health care encounter, then, may be measured in the economic terms of “value-added diagnosis,” such as for those conditions identified above. Health economics aside, few would argue against the notion that the responsibilities of a primary contact physician include the appropriate management of potentially life-threatening conditions such as chest pain.

This presentation comprehensively reviews the extant body of literature on the topic of chest pain, and reports on current consensus regarding appropriate clinical management of the ambulatory chest pain case.

METHODS

Articles were identified using the search databases Medline, CINAHL, and Index to Chiropractic Literature, and by surveying bibliographies of retrieved articles. Final yield was 111 relevant articles for this study, which were reviewed and categorized along the following dimensions:

1. Review (theoretical) vs. Empirical Studies
2. Review articles:
   - Extensiveness of literature cited
   - Clinical topic (Prevalence; Diagnosis; Treatment; Clinical Protocols/Algorithms/Guidelines/Standards of Care)
3. Empirical works:
   - Sample size(s)
   - Study design
   - Clinical topic

RESULTS

Review reveals an extensive but fairly unremarkable body of literature on differentially diagnosing the various typical and atypical clinical presentations of chest pain, primarily focusing on cardiovascular, respiratory, and GI findings. A substantial and growing body of empirical literature addresses the presentation of musculoskeletal chest pain in medical settings. Recent studies suggest that for chest pain presentations to primary contact ambulatory medical settings (e.g., emergency and urgent care, physician’s offices), up to one fourth may be musculoskeletal in origin. These same articles suggest that greater attention be paid to including appropriate medical diagnostic procedures for identifying musculoskeletal chest pain patients.

A surprisingly limited volume of literature reports on chiropractic diagnosis and management of musculoskeletal or nonmusculoskeletal chest pain, and the prevalence of chest pain presenters in chiropractic settings. A very recent trend

(1995+) of an almost explosive growth of the literature on clinical guidelines, protocols, algorithms, and standards of care concerns diagnosis and early case management of chest pain presentations. While this literature demonstrates a clear consensus on the need to rule out potentially life-threatening conditions, there is a surprising variability in terms of agreement on the utility of various diagnostic and treatment technologies, the appropriateness of conducting more comprehensive differential workup in the emergent setting, and the cost benefit of various approaches to chest pain diagnosis and management. While the empirical studies cited earlier noted the need to consider musculoskeletal sources of chest pain, this particular dimension was conspicuously absent from current medical standards of chest pain care.

DISCUSSION/CONCLUSION

This very important topic has implications both for the chiropractic and nonchiropractic health care professional. The needs of the patient can be best served when all health care professionals recognize their responsibility in coordinating care across all providers and settings.

It is important to document the extent to which chest pain cases are seeking out chiropractic care as a first, or later, point of contact with the health care system, the degree to which such care-seeking is appropriately documented in the clinical records, and the manner in which such cases are managed. Given the dearth of information available, further work on this topic is needed.

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Developing a Patient Advocacy Program as a Tool for Quality Improvement in a Teaching Clinic

John Stites, D.C., D.A.C.B.R, Palmer College of Chiropractic

Patient satisfaction is essential to any successful patient-centered clinical enterprise. To ensure satisfaction it is necessary to have assessment methods. Surveys are good tools for gaining information, but they are formal and impersonal. Since the clinical arts are also personal arts, a more personal means of assessing satisfaction may be desired. This can be accomplished with a patient advocacy program. A patient advocate supplements and enhances communication between clinic personnel and the patient. The purpose of this project is to develop a patient advocate program in a chiropractic teaching clinic as a means of quality improvement by identifying patient concerns and assessing and improving patient satisfaction.

MATERIALS AND METHODS

To establish the program, the following three steps were deemed necessary:

1. Identify the advocate for the patient.
2. Provide a written contact with the patient from the advocate
3. Establish personal contact between the patient and the advocate

The advocacy program was implemented in May 1999 with all new patients in a chiropractic teaching clinic. The clinic is an off-campus satellite with approximately 800 patient visits per month. The advocate was defined as the single person a patient could contact with concerns in any aspect of clinic operations. The person chosen does not have any contact with the patient during routine care.

All new patients receive a letter from the clinic director introducing the advocate. A letter from the advocate follows within a week, letting the patient know that he or she will receive a phone call. The following week, the advocate calls and performs a verbal survey. If not reached on the first try, at least one additional attempt is made to contact the patient by phone.

The verbal survey was developed prior to initiating the program. After piloting the survey with staff members of another department, a short, six-question survey with yes and no answers and an opportunity for comments was developed.

RESULTS

Of a total of 73 new patients in the first 10 weeks of the program, 54 have been successfully contacted; all agreed to participate in the survey. Of these patients, 30 (56%)

were female, ages ranging from 12 to 78 years with a mean age of 43.2, and 32 are currently active. All but two of the surveyed patients answered favorably to all questions posed. One patient reported a problem with a specific student and has elected not to return for care. Another made a recommendation for improving service.

DISCUSSION

The major purpose of the program is to establish a system for assessing initial satisfaction and identifying patient concerns. The system developed appears to be feasible and is now being refined.

With just two exceptions, all patients indicated satisfaction with their care. Two useful comments for improving service were elicited in the 54 interviews; a more sensitive assessment instrument may garner more comments. As the advocate was unable to reach 20 patients by phone, a written survey is also being considered. With refinements, there is the potential to use this system as an additional instrument for the evaluation of faculty, staff, and students.

CONCLUSION

A patient advocacy program is a mechanism of addressing patient concerns and can serve as a means of assessing and contributing to satisfaction, thereby contributing to quality improvement. This evolving program has the potential to enhance patient-centered practice in a teaching clinic. At this point, the verbal survey should be refined and a means of contacting those patients not reached by phone should be developed.

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The Effect of Chiropractic Care on Jet Lag of Finnish Junior Elite Athletes

William Straub, Life University

Life University's International Sports Training Institute (ISTI) was founded to address important problems that concern elite athletes and coaches. For example, during the Atlanta Olympic Games, ISTI researchers, in cooperation with investigators at the Australian Institute of Sport, studied the adaptation of Olympic athletes to the hot and humid conditions of the southeastern United States. As the 2000 Olympics in Sydney approach, an important concern is the effect of jet lag on athletes. In some instances, athletes will have to cross 12 time zones to reach Sydney. Since the effect of jet lag is well known and documented, the purpose of this investigation was to determine the effect of chiropractic care on the jet lag of Finnish junior elite athletes who traveled from Helsinki to Atlanta and returned.

METHODS

Fifteen Finnish athletes were randomly assigned to one of three groups, controlling for gender. Group I athletes (chiropractic adjustment, $n = 5$) received chiropractic care by licensed chiropractors each day of the 18-day experiment. Group II athletes (sham adjustment, $n = 5$) received sham adjustment each day of the study. Group III athletes (control, $n = 5$) took all tests but did not receive chiropractic or sham adjustment. Following the signing of consent forms, all athletes received complete physical examinations, including x-ray (group 1) or sham x-ray (group 2). Prior to adjustment, group I athletes received cervical spine thermographic scans, supine leg checks, cervical palpation, prone leg checks, and spinal palpation. If adjustment was indicated, athletes were adjusted using the Toggle procedures. Following adjustment, chiropractors completed a supine leg check followed by a thermographic scan. The sham protocol was identical except the subjects were placed in a prone position and a deactivated (no excursion) adjusting instrument (Activator) was used to make sham adjustments lateral to the spine on the erector spinae muscles. The mood of each athlete was monitored daily by the administration of the Profile of Mood States Questionnaire (POMS). To avoid diurnal variations, the 65-item questionnaire was given each day at 8:00 a.m. for 18 consecutive days. The POMS measured six important components of mood (i.e., tension, anger, fatigue, depression, vigor, and confusion). A total mood disturbance score (TMD) was calculated for each athlete by adding his/her scores for tension, anger, fatigue, depression, and

confusion and subtracting the sum from her/his score for vigor. To avoid language problems, each item of the POMS was translated into Finnish. Since jet lag produces sleep disturbance, an Actiwatch (Mini-Mitter, Inc., Sunriver, OR) was positioned on the dominant wrist of each athlete. These devices were worn for the duration of the investigation. Actiwatch data were downloaded at selected intervals so that each athlete's actual sleep time, sleep efficiency, sleep and awake bouts, duration of sleep and awake bouts, and actual awake time could be calculated. A movement and fragmentation index was also calculated for each participant. It was hypothesized that athletes who received chiropractic care would sleep more efficiently than participants who received sham adjustment or no adjustment at all. Heart rate data were recorded using a Polar Heart Rate Unit during sleep, exercise, assessments, and chiropractic care.

RESULTS

Data collection was completed in July 1999. Data analysis will be finished by September 1999. Repeated-measures ANOVA will be used to seek differences across groups. Since random assignment does not ensure equality, especially in investigations that have a small number of participants, repeated-measures MANCOVA will be used to adjust final scores for initial differences that may have existed between the groups prior to the start of the experiment. All hypotheses will be tested at the .05 level of significance.

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Chronic Lymphocytic Leukemia

Mai Tran, B.S.M.T.(A.S.C.P.), B.S., D.C., D.A.B.F.E., Parker College of Chiropractic

This case study proposes to demonstrate how a typical patient presentation in a chiropractic office with hip pain can become complicated, giving rise to a multitude of other conditions that may not be expected. The case emphasizes the importance of good diagnostic skills as well as the necessity of diagnostic tests to accomplish a comprehensive picture of the patient's condition and the proper treatment plan.

OBJECTIVES

The main objectives of the study are:

1. To demonstrate the necessity of a comprehensive examination
2. To demonstrate the necessity of diagnostic tests
3. To emphasize good diagnostic skills

METHOD

The case will be presented with case history, examination, rationale for testing procedures, interpretation of results, discussion, and conclusion.

RESULTS

Results of tests ordered by both the treating chiropractor and consulting entities will be presented.

DISCUSSION

Specific interpretation of the case will be presented as well as a general discussion of the condition.

CONCLUSION

Conclusions will be drawn from all examination procedures and test results.

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Management of a Patient with Hip, Groin, and Buttock Pain Secondary to a Trigger Point in a Healed Surgical Scar Treated with a Manual Soft-Tissue Technique

William Updyke, D.C., Palmer College of Chiropractic–West

This case report describes the clinical presentation, history, and manual treatment using soft-tissue techniques of a 30-year-old male with local and referred pain secondary to a trigger point in a healed surgical scar.

SUMMARY OF BACKGROUND DATA

There is sparse documentation in the literature of patients with the phenomenon of a trigger point originating in healed scar tissue. The cases that have been presented typically describe medical treatment consisting of anesthetic injections into the nidus of the trigger point as a means of alleviating the symptoms. Described here is the case of a 30-year-old male complaining of right-sided hip, groin, and buttock pain that started insidiously approximately 1 year prior to entering our office. Exact reproduction of all his subjective complaints during the examination occurred with palpation of a nodule within a $4'' \times 1/8''$ scar that started $2''$ below and just medial to the ASIS and traveled medially and inferiorly towards the symphysis pubis.

METHODS

The trigger points in the patient's surgical scars were treated with both transverse friction massage and a passive stretching technique directed towards stretching the scars. Stretching was achieved with the patient lying with the involved leg up; the trigger point was contacted manually with a digit and pressure through the digit was exerted in an anterior to posterior and inferior to superior direction. Initially, the hip was in either a neutral or slightly flexed position. The pressure was maintained on the trigger point and then the leg was passively brought into extension. His outcome was evaluated via subjective pain assessment on a 0–10 verbal pain scale.

RESULTS

The patient was last re-evaluated almost 6 months after initiating care. His treatment was disrupted by a nonrelated medical emergency. However, at the re-evaluation, he related that overall his right hip symptoms were 60% improved. His complaints consisted of "stiffness" in the right groin, specifically over the surgical scars, without and lateral hip area or buttock pain. He rated the stiffness as a 5 or 6 out of 10. Palpation of the nodule within the $4'' \times 1/8''$ scar caused local symptoms and some radiating pain into his right anterior thigh.

DISCUSSION

The case of a patient with a trigger point in a healed surgical scar that was treated with some success using manual soft-tissue techniques has been presented. There is little in the way of documentation of this condition in the medical literature, so the characteristics of individuals suffering from it, along with its prevalence, are unknown. The invasive medical treatment of this condition has been described. In describing this patient, a case is made for using conservative manual soft-tissue technique to treat a painful and potentially disabling condition in a healed surgical scar.

CONCLUSION

Chiropractors should be aware of the possibility of regional and referred symptoms arising from trigger points in healed scar tissues. This case demonstrates one presentation of this condition and offers a conservative, soft-tissue mobilization approach to treatment.

Academic and Clinical Design to Promote Utilization of Active Care Procedures

Dan Weinert, M.S., D.C., D.A.C.R.B., C.S.C.S., and **Anne-Marie McDermott**, Palmer College of Chiropractic

Active care is described as therapeutic procedures where the patient physically or consciously plays a role in the treatment. In contrast, passive care is described as therapeutic procedures performed on a patient regardless of their conscious effort. Current standards of care for musculoskeletal conditions advocate a relatively rapid progression towards active rehabilitative procedures. These standards are driven by the fact that exercise can be beneficial in healing soft tissue, decreasing future injuries, and fostering patient empowerment. In support of these standards, Palmer College of Chiropractic's Rehabilitation and Sports Injury Department enacted several measures to increase awareness and utilization of active rehabilitation within the clinic system.

METHODS

The department restructured the rehabilitation courses and appropriately renamed them as passive and active care. The classes are taught in succession with passive occurring first and active care finishing the series. This succession mimics what should occur as case management progresses, a switch from passive to active procedures. The passive care course introduces soft-tissue stages of healing and emphasizes the use of passive procedures for the inflammatory stage. The active care course reiterates the stages of healing and promotes the inclusion and emphasis of active procedures as healing progresses to repair and remodeling stages.

Departmental management forms were redesigned to mimic stages of soft-tissue healing. The first form is labeled acute and predominantly contains passive modalities for treatment. The next two forms progressively change the choices to active procedures.

Rehabilitation residents were recruited to teach the active care course. Previous instructors did not have content expertise in rehabilitation. As a result, the coursework lacked depth and failed to emphasize active care. Residents are extensively trained over a 3-year period and earn Diplomate status.

RESULTS

The departmental changes resulted in an increase in the utilization of active care procedures within a 2-year period. The results are based on the tracking of daily patient treatment records for 1-month intervals, 4 times a year, for 2 years. The new management forms were implemented in January 1998 and the educational changes occurred in March 1998. The survey was initiated in April 1997 as a baseline prior to the departmental changes. Records were kept on daily utilization of various procedures until May 1999. In April 1997, exercise comprised only 7% of procedural choice. Immediately after the implementation of educational changes, exercise increased to 23%; it increased even further to 34% within 16 months. In contrast, passive care treatment decreased in usage.

DISCUSSION/CONCLUSION

The increase in active care utilization can be attributed to the consistent message that was created between the clinical and academic environments. The Palmer Rehabilitation and Sports Injury Department was successful in shifting the rehabilitation paradigm to focus on active care through course reorganization, management form revision, and employing instructors with content expertise.

Future studies regarding outcome assessments are justified. It would be interesting to determine if the number of patient visits per case decreased as a result of active care utilization. These findings may help to defend the concept that active procedures facilitate soft-tissue healing. Additionally, future studies could contain information regarding patient satisfaction with care. Perhaps an objective scale could be utilized to monitor patient satisfaction, with and without the use of active care procedures. These results may help substantiate the claim that patient satisfaction increases when patients are empowered through active care.

This curricular model could be employed in various settings and multiple academic areas. For success, it is fundamental to maintain a consistent message throughout the curriculum. This consistency stems from continuity between academic and clinical settings.

Exploring the Relationship between Multiple Sclerosis Symptomatology and Chiropractic Care through a Prospective Case Series

Barry C. Wiese, D.C., Palmer College of Chiropractic

Multiple sclerosis (MS) is a demyelinating disease of the central nervous system afflicting over 250,000 persons in the United States alone. While the etiology of MS is currently unknown, much clinical evidence points to an infectious process involving an unknown agent, causing an immune response against one's own nervous system in genetically susceptible persons. The resulting inflammation of the central nervous system tissues produces a wide variability in the clinical sense, with subtypes of MS ranging from remitting-relapsing varieties to a chronic progressive expression of MS. No cure exists for MS, and as a result most therapies are directed toward the alleviation of MS-related symptomatology while promoting self-sufficiency. The medical approach toward MS symptom relief generally includes a vast array of pharmaceutical agents, diet modification, physical therapy, and addressing associated psychological issues. Alternatives to these treatment modalities have increasingly become available, most with little more than anecdotal support. Described is a prospective case series involving chiropractic care with four MS patients, each diagnosed with the chronic progressive form of the disease. The purpose of this series was to investigate any significant relationship between chiropractic care delivery and MS-related symptomatology.

METHODS

Four patients were selected from a local MS support group, each with a diagnosis of chronic progressive MS (confirmed by imaging). A clinical trial of 6 months duration was undertaken, utilizing two separate and distinct methods of chiropractic care: Three of the patients were treated over the course of 6 months utilizing full-spine chiropractic manipulative therapy, while the fourth was treated using only Toggle recoil upper cervical technique. Subjective and objective parameters were measured initially, and every 4 weeks until the completion of the 6 month trial. These outcome measures included the SF-36 Health Survey, as well as the MS-ADL Scale (Gulick); strict physical examination criteria were also followed at these intervals. Lastly, each patient was encouraged to keep a daily diary in which to record pertinent subjective data.

RESULTS

Data collected over the course of the clinical trial illustrates measurable change in various "quality of life" issues. Data retrieved from SF-36 surveys measured the following: General Health, Physical Functioning, Limitations Due to Physical Health, Limitations Due to Emotional Health, Pain, Energy/Fatigue, and Emotional Well-Being. The MS-ADL Scale (Gulick) measures were considerably more specific, including: Eating, Dressing, Walking, Transfer, Travel, Bathing, Toileting, Recreation/Socializing, Sensory/Communication, and Intimacy. Data collected indicated that change was primarily seen in categories involving physical ability, energy level, and bodily pain; these areas are discussed fully, with a comparison being made between the two treatment groups.

DISCUSSION

Presentations of multiple sclerosis vary greatly, in the clinical sense. Many patients are affected with change in physical ability or general musculoskeletal function as a direct manifestation of the disease. Compensation for these deficits is certain. These compensatory efforts may in fact create still more symptoms, negatively influencing the patient's perception of well-being. When normal spinal motion patterns have been altered, either directly or indirectly, chiropractic manipulative therapy may be indicated. Correction of these spinal aberrations may positively impact the MS patient's quality of life.

CONCLUSION

This case series has suggested that chiropractic care is a viable, noninvasive form of treatment for musculoskeletal symptoms associated with multiple sclerosis. While promising, the results of this study indicate the need for further research in this area.

Availability of Data on Chiropractic and Nonchiropractic Health Care Education and Training in Developed Nations
Establishing a Centralized Electronic Resource for Policy Studies and Health Services Research

Glenda Wiese, M.A.,* **Monica Smith**, D.C., Ph.D.,† **Chutima Phongphua**, M.D., D.C.,† **Gary Krakos**, D.C.,* and **Dennis Peterson**, M.A.,* *Palmer College of Chiropractic and †Palmer Center for Chiropractic Research

International studies of health care education, training, and manpower draw from data on health care providers such as that compiled by the Organization for Economic Cooperation and Development (OECD). OECD datasets contain a compilation of information on health care systems in developed nations. However, these datasets do not include information on nonmedical professions such as chiropractic health care providers. Health education and training data currently contained in OECD datasets include national figures on annual enrollment, annual new admissions, and annual degrees awarded, for undergraduate, postgraduate, paramedical, and medical school programs.

The availability of accurate and comprehensive health systems data is essential for conducting useful and relevant health services research and for making sound health policy decisions. The goals of this project are to determine the extent to which international data on chiropractic education and training is readily available from existing sources and the feasibility and cost-efficiency of collecting same and converting into accessible electronic form, and to report on the process and outcome of this project in order to facilitate use of the created database in collaborative projects.

METHODS

Data sources contained in the special collections and archives of the David D. Palmer Health Sciences Library were reviewed. The authors corresponded and followed up with national and international chiropractic organizations and chiropractic colleges. A brief survey of non-U.S. chiropractic colleges was sent out via mail, fax, and e-mail.

RESULTS

A search of the library and archives holdings, as well as other departments on the Palmer Campus, and correspondence with national chiropractic associations and international chiropractic colleges resulted in the acquisition of 59% of the international colleges/ catalogs. Additional information was collected form The International Chiropractors Association (ICA) and the World Federation of Chiropractic (WFC) publications, and from individual colleges' web sites. Initial response rate to the survey of non-U.S. chiropractic colleges was low, with follow-up to nonrespondents and analysis of survey data still underway.

DISCUSSION

Initial entry of above data into electronic format, and ongoing maintenance of electronic data files can be accomplished in a cost-efficient manner by utilizing existing resources within the chiropractic academic community (e.g., staff and faculty personnel resources, and data management expertise and facilities).

CONCLUSION

WFC maintains a current hardcopy file of narrative reports on international chiropractic education and training as reported by members at WFC meetings. Other chiropractic organizations also generate periodic hardcopy narrative reports on this topic (e.g., FACTS Bulletin maintained by the ICA). The reliability and accessibility of such data is indeterminate, due to the variability of accreditation and regulation of chiropractic educational institutions across nations, the irregularity of publications schedules, and nonstandardized reporting procedures. This project makes a substantial contribution to the capacity of the chiropractic profession to contribute to policy development within relevant health care systems, by creating an infrastructure for managing readily accessible electronic data on chiropractic education and training that is matched to similar data for other health professions (OECD data). Certain data elements are not reported in the OECD dataset, and some non-OECD nations contain chiropractic teaching institutions (i.e., South Africa, Brazil.) Using this poster as a data collection point, the authors invite ACC attendees and other chiropractic representatives to contribute information on the health care systems in their respective countries, thereby further developing the electronic database resource that is described in this project abstract.