

Reducing the lifetime risk of cancer from spinal radiographs among people with adolescent idiopathic scoliosis

Levy AR, Goodberg MS, Mayo NE, Hanley JA, Poitras B. *Spine* 1996; 21(13):1540-1548.

Study Design: Data from a retrospective cohort study of people with adolescent idiopathic scoliosis were combined with information on full-spinal radiographs to estimate contemporary x-ray doses and lifetime risks for development of cancer.

Objectives: To project the lifetime risk for development of cancer from diagnostic radiographs for people with adolescent idiopathic scoliosis.

Summary of Background Data: Although a twofold excess risk for breast cancer has been reported for women treated for scoliosis between 1925 and 1965, information on the cancer risks associated with scoliosis management today is sparse. Specifically, there is a lack of up-to-date information on the number of spinal radiographs taken, the organ-specific x-ray doses from current radiographic techniques, and the projected cancer risks.

Methods: The cohort consisted of subjects with adolescent idiopathic scoliosis who were referred to the scoliosis clinic of a large pediatric hospital between 1965 and 1979 in Montreal, Quebec, Canada. Based on radiographic equipment and practices implemented in 1982, organ-specific x-ray doses to the thyroid gland, female breast, respiratory organs, digestive organs, and bone marrow were calculated using Monte Carlo methods. These doses were incorporated

into a life table procedure to calculate theoretic lifetime cancer risks. For all organs except the thyroid gland, dose-response models from the United States National Academy of Sciences Fifth Committee on the Biological Effects of Ionizing Radiation were used. For thyroid cancer, a risk model was derived from a study of thyroid cancer incidence after x-ray treatment for tinea capitis.

Results: The average number of spinal radiographs was 12 for women (80% anteroposterior or posteroanterior) and 10 for men (78% anteroposterior or posteroanterior). Cumulative x-ray doses were in general higher in adolescents who were referred as younger teenagers than at later ages, and doses increased with the size of the spinal curve. Depending on the age at referral and curve size, the total excess lifetime cancer risks were calculated to range from 42 to 238 cases per 100,000 women and 14 to 79 cases per 100,000 men. For subjects who underwent surgery (those exposed to the highest doses), the lifetime number of cancer cases over and above background was almost as great as the number of thyroid cancers that would occur in the absence of radiation exposure. If the anteroposterior view was replaced by the posteroanterior view, a three- to sevenfold reduction in cumulative doses to the thyroid gland and the female breast would be achieved, yielding three- to fourfold reductions in the lifetime risk of breast cancer and a halving of the lifetime risk of thyroid cancer.

Conclusions: The cancer risks from full-spinal radiographs for scoliosis are not negligible and can be reduced from one half to three quarters if the anteroposterior view is replaced with the posteroanterior view.

Indigestion and heartburn: a descriptive study of prevalence in persons seeking care from chiropractors

Bryner P, Staerker PG. *J Manipulative Physiol Ther* 1996; 19(5):317-323.

Objective: To determine the prevalence of indigestion and mid-back pain in persons seeking chiropractic care.

Design: A cross-sectional survey using a self-report questionnaire.

Setting: Three primary care private chiropractic practices in metropolitan Perth, Australia.

Subjects: Persons seeking chiropractic care during a 1-month period.

Intervention: None.

Outcome measures: Six-month prevalence of indigestion and mid-back pain, rate of association between indigestion and mid-back pain, and distribution of thoracic dysfunction and manipulation. Proportion who report relief from manipulation.

Observations: Of 1567 persons who consulted 8 chiropractors on 2974 occasions during November 1994, 1494 re-

sponses were obtained. There were 119 first-time consultations. The mean age of respondents was 41 yr (range 10-94); 57% were women. Fifty-seven percent reported indigestion infrequently or more and 71% reported mid-back pain during the previous 6 months. Forty-six percent experienced both symptoms during this time. Of these, 36% reported the symptoms together at some time. Twenty-two percent of those with indigestion reported some relief after chiropractic care. Compared with those reporting no relief, mid-back pain was more common among those reporting indigestion. The level at which the manipulation was given was unrelated to relief. No major differences were noted between the three clinics in patient demographics or the main outcome measures.

Conclusions: Indigestion and mid-back pain are commonly experienced in this population. A person with indigestion is more likely to report mid-back pain. Relief of indigestion by manipulation is more common among those who report mid-back pain. Further research is needed to understand differences between subgroups and differences compared with other studies.

**The passive/active care continuum:
a model for the treatment of
spinal-related disorders**

Murphy DR.

JNMS: Journal of the Neuromusculoskeletal System 1996;
4(1):1-7.

The need for cost containment in American health care has forced the various specialties to examine the treatment approaches that are utilized to assess their clinical and cost-effectiveness. This scrutiny must apply particularly to the area of spine related disorders (SRD) as this category of human ailments includes conditions that are among the most common and costly in all of medicine. Emphasis has most recently been placed on "active care" as opposed to "passive care" in the treatment of these disorders; however, there exists a need for redefinition and expansion of these concepts to allow for treatment planning that will meet both the needs of the health care system for cost effectiveness and of the patient for clinical effectiveness. A continuum is presented that is designed to assist the physician in establishing a conceptual framework from which to work in deciding on treatment plans for patients suffering from SRD.

**Cervical spine adjustments by Perth chiropractors
and post-manipulation stroke:
has a change occurred?**

Haynes MJ.

Chiro J Aust 1996; 26(2):43-46.

Objective: To determine whether there have been changes in the approach of Perth chiropractors towards cervical spine adjusting that may account for an apparent reduction in the incidence of local manipulation-related stroke during the years 1986 to 1991.

Design: Cross-sectional survey of perceptions of Perth chiropractors regarding their Perth experience of clinical practice, especially with regard to their use of cervical spine adjustments.

Setting and Participants: Questionnaires were sent to all 75 Perth chiropractors who were identified in the latest local Yellow Pages telephone directory.

Results: Forty-one chiropractors (56%) responded. Twenty-one respondents reported commencing practice in Perth prior to 1986; eleven commenced between 1986 and 1991, and nine after 1991. Most respondents in each group answered that they had not changed their tendency to administer cervical adjustments nor the frequency of rotational cervical adjustments. Thirty-seven per cent (37%) of the pre-1986 group, 9% of the 1986-1991 group and none of the post-1991 group admitted frequent use of rotatory cervical adjustments. Minor changes in the force of adjustments were reported by almost half of all the respondents.

Conclusion: The only change found in this study that may have contributed to the apparent reduction in the incidence of local stroke cases following cervical adjustments was the tendency of recent graduates to use rotatory cervical adjustments, as they perceived them, less frequently than their senior colleagues. There was no evidence of major changes that individual chiropractors had made.

**How common is low back pain
in the Nordic population?**

**Data from a recent study on a middle-aged
general Danish population and four surveys
previously conducted in the Nordic countries**

Leboeuf-Yde C, Klougart N, Lauritzen T.

Spine 1996; 21(13):1518-1526.

Study Design: Data were obtained in a Danish cross-sectional postal survey and compared with information from four methodologically similar studies conducted in some of the Nordic countries between 1977-1985.

Objectives: The objectives were to estimate the life-time cumulative incidence and the 1-year period prevalence of low back pain in the general population, to study whether there are any differences in the occurrence of low back pain according to age and sex, and to investigate whether low back pain is on the increase.

Summary of Background Data: The prevalence of low back pain commonly is thought to be high, but estimates differ considerably between studies. It is also not known whether low back pain is more common in men or women or in certain age groups, and it is unclear whether the prevalence of low back pain has increased in the past years.

Methods: Prevalence estimates were established in a current study, and results then were adjusted to suit the age and sex criteria of four previous studies.

Results: Between 60-65% of 30- to 50-year-old men and women living in the Nordic countries reported at least one incident of low back pain during their lifetime, based on the information from four studies with a total sample size of 3513. The most likely 1-year period prevalence estimate is between 44-54%, based on two studies and a total sample of 2035 individuals. There was no consistent evidence favoring higher figures with increasing age or relating to any of the genders. No clearly observed time-related trend was noted.

Conclusions: When data were examined from five methodologically similar studies on the 30- to 50-year-old Nordic population, there was reasonable consistency of prevalence figures. Thus, approximately 66% report having had low back pain at least sometime during their lifetime and approximately 50% sometime during the preceding year, with no significant differences relating to age or sex. The best method to investigate whether low back pain is on the increase might be through replicate studies.

A comparison of radiographic and electrogoniometric angles in adolescent idiopathic scoliosis

Mior SA, Kopansky-Giles DR, Crowther ER, Wright JG. Spine 1996; 21(13):1549-1555.

Study Design: This was a cross-sectional study of a consecutive group of adolescent patients presenting to a scoliosis clinic for routine assessment or monitoring of their scoliosis, excluding postsurgical patients.

Summary of Background Data: *In vitro* studies suggested electrogoniometry could be useful in the evaluation of scoliosis. No prior *in vitro* study had been performed.

Objectives: To determine the reliability and validity of an electrogoniometric instrument, the Metrecom Skeletal Analysis System, in assessing adolescent idiopathic scoliosis.

Methods: Thirty-one patients were examined, radiographed, and scanned with the Metrecom Skeletal Analysis System twice by two different examiners. The magnitudes of the curves derived from the Metrecom Skeletal Analysis System scans were compared with each other and with the Cobb angles measured from standing radiographs.

Results: The intraclass correlation coefficient (a measure of agreement, ranging from 0 to 1, where 1 represents complete agreement) for the intraexaminer reliability of the Metrecom Skeletal Analysis System ranged from 0.71 to 0.83. The interexaminer reliability intraclass correlation coefficient of the Metrecom Skeletal Analysis System was 0.58, with a mean difference between examiners of 5.5° (SD = 5°), and limits of agreement (mean difference \pm 2 SD) ranging from -4.5° to 15.6°. The Metrecom Skeletal Analysis System and the radiographically derived Cobb angle correlation was 0.64, but the mean difference between the methods was 3.7° (SD = 11.1), with limits of agreement from -18.4° to 25.9°.

Conclusion: The Metrecom Skeletal Analysis System does not provide sufficient clinical precision to substitute for the Cobb angle measured from spinal radiographic measurements in the management of adolescents with scoliosis.

Chiropractic patients in a comprehensive home-based geriatric assessment, follow-up and health promotion program

Coulter ID, Hurwitz EL, Aronow HU, Cassata DM, Beck JC. Top Clin Chiro 1996; 3(2):46-55.

Purpose: The purpose of this study was to assess characteristics of older patients who seek chiropractic care. In addition, a qualitative literature review was done to identify what has been published regarding chiropractic care and geriatrics.

Methodology: A detailed examination of a database collected during a randomized clinical trial testing the effectiveness of a comprehensive geriatric assessment program was performed.

Results: Within a total sample size of 414, a subpopulation of 23 (5.65%) reported receiving chiropractic care. This figure is similar to published reports of distribution of chiropractic patients in the general population. Chiropractic users were less likely to have been hospitalized, less likely to have used a nursing home, more likely to report a better health status, more likely to exercise vigorously, and more likely to be mobile in the community. In addition, they were less likely to use prescription drugs.

Conclusion: Results suggest a need to develop chiropractic models that address the special preventive and rehabilitative needs of the older patient.

Divergent paths: chiropractic and osteopathy

Doney PJ. Chiropr J Aust 1996; 26(2):63-67.

The origins of both chiropractic and osteopathy are very close in time, space and philosophy, yet, in the United States at least, they have followed paths of divergent evolution. The ground for the development of these two professions was prepared by the social, political and medical dogmas of the nineteenth century. Interestingly, parallels can be drawn between the characteristics of each group and the "unchurched" religions of the period. Yet despite the many parallels between the two groups and the similarity of the forces arrayed against them, they have developed along very different lines. Crucial to the development of these differences are the strategies employed by each group to deal with the forces that threatened their existence. The way that issues surrounding education, science, pharmacology and medicine have been addressed have shaped the two professions. These issues and attitudes continue to shape practices and politics in an era of increasing acceptance.

Familial predisposition for degenerative disc disease: a case-control study

Simmons ED, Guntupalli M, Kowalski JM, Braun F, Seidel T. Spine 1996; 21(13):1527-1529.

Study Design: This case-control study was undertaken to determine if relatives of patients who had been admitted for surgery for degenerative disc disease-related problems were at increased risk for lower back pain or sciatica.

Objectives: To determine if familial factors play a role in placing a person at risk for development of degenerative disc disease of the lumbar spine.

Summary of Background Data: It is known that smoking and various occupational factors can place a person at risk for degenerative disc disease problems. It is not known if a familial predisposition may also exist.

Methods: The family members and relatives of 65 patients who had undergone surgery for lumbar degenerative disc disease were interviewed with a standardized questionnaire and compared with a control group of 67 patients who had been admitted to hospital for non-spine-related orthopedic procedures. The same interview and standardized questionnaire was used for both groups by a single observer.

Results: In the study group of 65 patients who had undergone surgery for degenerative disc disease, 44.6% were noted to have a positive family history, whereas 25.4% of the patients in the control group had a positive family history. Eighteen and one-half percent of relatives in the study group had a history of having spinal surgery, compared with only 4.5% of the control group.

Conclusions: The results indicate that a familial pre-disposition to degenerative disc disease can exist along with other risk factors.

Manipulative care and older persons

Bergmann TF, Larson L.
Top Clin Chiro 1996; 3(2):56-65.

Purpose: This article discusses the use of manipulative procedures for dysfunctional joint conditions affecting older patients. The effective and efficient conservative management of the geriatric patient requires some significant differences from management techniques used in younger populations.

Method: A qualitative review of selected relevant literature was undertaken to determine manual treatment options for older patients. In addition, data were sought on the role of manual therapy in maintaining function in the older population.

Conclusions: Manual treatment of musculoskeletal conditions in older patients can be undertaken with several precautions and modifications to usual manipulative procedures. They include adequate screening (e.g., radiograph, appropriate laboratory studies, etc.), attention to patient positioning, and minimization of the applied force. There is enough anecdotal evidence to justify further study to evaluate the effectiveness of manual therapy and specifically chiropractic adjustive procedures for improving functional performance in older individuals.

The chiropractic practice model: an exploration of international trends

Jamison JR.
Chiropr J Aust 1996; 26(2):57-62.

Little data is available on the practice model preferred by chiropractors. This study describes a preliminary investigation of the practice models preferred by chiropractors of diverse cultural and educational backgrounds and explores the flexibility of practitioners in their use of these models.

Method: Twenty-two case studies of chiropractors interacting with four or five of their patients were undertaken. A convenience sample of 22 chiropractors from four different countries was used. Practitioners were requested to identify their preferred practice model from a list provided and to indicate which practice model was used in the management of each patient. Practitioners were also requested to indicate clinical behaviours they perceived each of their participating patients would most value. All participants completed questionnaires to establish their preferred behaviour style. Patients were requested to score their clinical satisfaction out of 10 and complete questions on their health locus of control.

Results: Despite each practitioner having a preferred practice model, all practitioners indicated they used at least two different models. Although the proficiency of practitioners to appropriately adapt their practice model to the behaviour patterns they perceived patients valued varied, this did not appear to substantially influence patient satisfaction. Chiropractors indicated a preference for the relational model, nonetheless a weak trend using a clinical model in acute and subacute compared with chronic cases was noted. Practitioners demonstrated awareness that patients with an external locus of control were more likely than those with an internal locus to conform to a clinical model.

Conclusions: Chiropractors participating in this study, regardless of their nationality, training or preferred behaviour style, favoured a relational practice model.

Management considerations in the geriatric patient

McCarthy KA.
Top Clin Chiro 1996; 3(2):66-75.

Purpose: Management of geriatric patients often requires the clinician to consider issues not normally addressed in the general patient population. A number of these issues are identified, and methods to collect and assess information in each area are outlined. Ongoing management strategies for reducing potential injury, illness, and frailty and developing habits that promote wellness are outlined.

Methods: A qualitative reviews of selected representative and relevant literature, incorporating clinical experience, is offered.

Summary: Unique considerations that may require emphasis in managing the older patient include living arrangements and family relationships, along with health and functional disabilities. Key clinical issues can involve multiple pathologies, atypical presentations, drug-related symptoms, and atypical responses to care. The importance of activation and exercise in maintaining cardiovascular function, pulmonary function, musculoskeletal performance, and conditioning needs to be emphasized in the older population. Wellness interventions, including nutrition and exercise, play key roles.