

COMPARISON OF USUAL VERSUS BEST PRACTICE IN PREVENTING AND
MANAGING LOW BACK PAIN

by

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Low back pain (LBP), both acute and chronic, is a serious concern that influences quality of life and rising healthcare costs. Musculoskeletal disorders (MSDs) contribute to 34% of work-related injuries in the United States that require missed days from work (Bureau of Labor Statistics, 2013). Back injuries are related to 41.2% of all MSD cases (BLS, 2013). Workers from all socioeconomic backgrounds and disciplines face some form of occupational risk that can contribute to work-related injuries. In one study nearly 40% of adults reported using some form of complementary and alternative medicine (CAM) therapy, including chiropractic and massage therapy (Barnes, Bloom, & Nahin, 2008). The main reason patients seek treatment from CAM practitioners is due to LBP (Sherman et al., 2006). There is very little information in the literature on the nurse's role in facilitating referrals to chiropractic and massage therapy. However, nursing practice routinely interacts with CAM therapies, and nurses must be knowledgeable about various treatment modalities (Fowler & Newton, 2006). Furthermore, injured workers have a more challenging time accessing chiropractic care in the state of North Carolina (Phelan, Armstrong, Knox, Hubka, & Ainbinder, 2004).

Review of Literature

Demographic characteristics of LBP

According to the Bureau of Labor and Statistics (2011), MSD cases have a significant impact on the number of occupational injuries in the U.S. Back injuries had the highest rate of injury out of all MSDs (BLS, 2013). Carey et al. (2010) found rising prevalence in chronic back pain over the past 14 years. Back injuries contribute to chronic LBP in veterans, and chiropractic interventions are commonly utilized in this population (Dunn, Green, Formolo, & Chicoine, 2011). A national Australian survey determined that 77% of women experience some form of

back pain (Broom, Kirby, Sibbritt, Adams, & Refshauge, 2012). Work-related low back injuries are a cause of growing public health concern.

In a statewide survey of over 5,000 random households in North Carolina, Carey et al. (2010) determined that whites and blacks had similar rates of chronic back pain. These same respondents were asked if they saw a provider for their back pain, including a primary-care physician, massage therapist, or chiropractor (Carey et al., 2010). The utilization of chiropractors was reported by 23.6% of whites and 21.7% of blacks, and the utilization of massage therapists was far lower at 6.7% of whites and 3.7% of blacks (Carey et al., 2010). Whites and blacks access chiropractors and massage therapists minimally.

The healthcare provider's role in LBP

Healthcare treatment modalities related to LBP are in a state of constant evolution. People are interested in trying different methods that provide increased health benefits or some advantage over traditional care. Therapy is considered complementary when it is used in addition to traditional treatment, while alternative therapies are used in place of the traditional treatments (Barnes et al., 2008). There has been marked disappointment with conventional medical care by physicians for LBP, which often contributes to patients looking for CAM providers as a viable treatment option (Lind et al., 2005). The conventional, or traditional, care consists of resting and icing the area of injury, as well as taking prescribed analgesic and antispasmodic medications. The physician may also utilize radiographic tests or refer patients with LBP to physical therapy. Specifically in North Carolina, worker's compensation claims for musculoskeletal injuries reported between 1975 and 1994 showed that 85.4% of patients were exclusively treated by medical doctors, while 0.8% of patients were only treated by doctors of chiropractic (Phelan et al., 2004). Overall, LBP accounted for 68.5% of the chiropractic visits and 35.9% of physician visits (Phelan et al., 2004). Physiotherapists in the United Kingdom also offer an array of CAM

therapies. A questionnaire was sent to 1,000 physiotherapists who were asked if they treated LBP, and if so, what methods of CAM were implemented (Hughes, Quinn, & Baxter, 2011). Nearly 94% of the physiotherapists mentioned they currently treated patients with LBP. More than 50% of these physiotherapists said CAM was used to treat the LBP. Acupuncture was the most commonly used therapy with an 83.2% response rate (Hughes et al., 2011). Massage therapy was used by 3.7% of the practitioners. An exact percentage of chiropractic care was omitted from the study (Hughes et al., 2011). Given that 70% to 85% of the U.S. population will experience some type of back pain in their lives, providers should evaluate the evidence of effectiveness of all modes of prevention and management of LBP (Lind et al., 2005).

The effectiveness of chiropractic care for LBP

Many of the studies evaluating chiropractic care effectiveness for LBP have been international studies. A Canadian study compared the conventional physician-directed care versus the current evidence-based clinical practice guidelines with chiropractic manipulation intervention for treating acute LBP (Bishop, Quon, Fisher, & Dvorak, 2010). The participants who underwent chiropractic manipulation interventions reported less pain than the physician-directed care group (Bishop et al., 2010). Broom et al. (2012) reported that 8,063 of the total 10,492 female participants in Australia experienced some degree of back pain during the previous year. While over 50% of the women with back pain only consulted a conventional care provider, 44.2% of women received treatment from both a CAM practitioner and a conventional care provider (Broom et al., 2012). The analysis showed women with frequent back pain expressed dissatisfaction with the conventional practitioners, and therefore, received combination CAM therapy (Broom et al., 2012).

Veterans experience LBP following military services (Dunn et al., 2011). Dunn et al. (2011) determined if there was any clinical improvement in veterans experiencing LBP after

receiving chiropractic therapy. Chiropractic interventions effectively relieved the veterans' LBP through a CAM therapy outside of the traditional Veterans Affairs medical care (Dunn et al., 2011).

A critical evaluation of chiropractic care reported the increased utilization of these services has doubled over the past 20 years (Ernst, 2008). Still the systematic reviews for chiropractic care make it difficult to determine the overall effectiveness of spinal manipulation. However, when spinal manipulation is administered strictly for back pain it may be as effective as traditional therapy (Ernst, 2008). The lack of success from conventional therapies in treating back pain may contribute to the increased use of chiropractic care, while some national guidelines even recommend this therapy for LBP (Ernst, 2008).

Treating LBP with massage therapy

A less commonly used form of CAM is massage therapy. In 1997 approximately 20% of Americans who visited massage therapists presented with a chief complaint of LBP. The number of patients receiving treatment from massage therapists doubled since 1997 (Dryden, Baskwill, & Preyde, 2004) and is gaining recognition in treating LBP (Imamura, Furlan, Dryden, & Irvin, 2008).

Preyde (2000) conducted one of the initial randomized controlled trials of massage therapy for LBP. Participants were assigned to comprehensive massage therapy, remedial exercise and posture education only, soft-tissue manipulation only, or a placebo laser sham treatment group (Preyde, 2000). All subjects underwent six treatment sessions over the course of a month. The comprehensive massage group reported decreased pain quality and intensity, as well as improved function over the other treatments (Preyde, 2000). When the subjects completed a one-month follow up survey 63% of the comprehensive massage therapy group and 0% of the placebo therapy group reported absolutely no pain (Preyde, 2000). It should be noted

that this was the first trial to specifically determine the effectiveness of massage therapy in LBP (Preyde, 2000).

In a comparison between two types of massage, structural massage and relaxation massage, and the usual care for chronic LBP, Cherkin et al. (2011) evaluated the effectiveness of these treatments at three different time intervals. Adults between the ages of 20 and 65 years with a history of nonspecific LBP were recruited (Cherkin et al., 2011). Both massage groups had 10 weekly treatments ranging from 50 to 90 minutes in duration (Cherkin et al., 2011). The usual care group simply continued on their current regimen and received no specific care. Using the Roland Disability Questionnaire, participants outcomes were compared from their baseline to 10, 26, and 52 week benchmarks. Cherkin et al. (2011) determined at 10 weeks the mean Roland Disability Questionnaire score was 2.9 points lower in the relaxation massage group and 2.5 points lower in the structural massage group than in the usual care group, indicating a significant reduction in pain (Cherkin et al., 2011). At the 26 week mark the two massage groups continued to experience functional improvements (Cherkin et al., 2011).

A systematic review evaluated studies of LBP and massage therapy. Imamura et al. (2008) only found five eligible randomized controlled trials, of mixed quality, that met the review requirements out of 174 massage therapy studies. It was determined “There is strong evidence that massage is effective for nonspecific CLBP [chronic low back pain]. There is moderate evidence that massage provides short- and longer-term follow-up relief of symptoms” (Imamura et al., 2008, p. 132). Massage therapy helps treat chronic LBP by improving patients’ symptoms and function (Imamura et al., 2008). These generalizations provide a basis of information on the effectiveness of massage therapy, but they do not include any additional statistical data.

Nurses do not typically administer or interact with chiropractic or massage therapy. As the patient's quality of life may improve with the use of CAM therapies, nurses should stay informed on various treatment modalities and their effectiveness. Nurses have a key role in helping patients understand the advantages and disadvantages of CAM (Fowler & Newton, 2006). There is a unique opportunity for nurses to facilitate and promote CAM therapies for patients in different healthcare settings. An outpatient oncology center started a pilot CAM program, and "In a newly developed role, a nurse specialist (NS) who is knowledgeable in CAM and conventional medicine was assigned to further develop and manage the program" (Chong, 2006, p. 83). The NS helped bridge the gap between patients, physicians, and CAM practitioners. This pilot study offered consultation and education about CAM, and it developed a referral process to CAM providers inside or outside of the oncology center (Chong, 2006). Nurses have a significant responsibility in advocating and informing their patients. Although nurses might not administer chiropractic or massage therapy they can serve a vital role in health teaching and referral to CAM therapies.

Prevention and management techniques for LBP

Hasan, Ismail, and Azidin (2010) investigated strategies for the prevention and management of LBP, including physical exercise, education, ergonomics training, and lumbar supports/back belts. Hasan et al. (2010) determined that education and lumbar supports do not effectively prevent LBP. There are a limited number of randomized controlled trials on ergonomics training effectiveness, but some data has shown it may decrease LBP occurrence. However, exercises did prove to be the one successful intervention in the prevention of LBP (Hasan et al., 2010). When discussing the effects of exercise, "...the type of exercise that is widely used is back strengthening, flexibility exercise and cardiovascular exercise" (Hasan et al., 2010, p. 1279). Williams et al. (2010) surveyed general practitioners in Australia to assess their

usual care for LBP in comparison to the best practice recommendations for LBP. After critically reviewing LBP guidelines from the United States, Europe, and Australia, five major recommendations were identified. The recommendations included: diagnostic triage, no routinely ordered radiological imaging, educate the patient while providing encouragement, utilize acetaminophen as the first-line analgesic, and review patient progress (Williams et al., 2010). However, Williams et al. (2010) concluded that the general practitioners' usual care did not follow the evidence-based guidelines. Only 17.7% of patients received acetaminophen while the majority of patients were prescribed non-steroidal anti-inflammatory drugs. Radiologic imaging, which is discouraged, was used in over 25% of patients (Williams et al., 2010).

The purpose of this Senior Honors Project was to compare the usual practice with best practice in the prevention and management of LBP among hospital workers in rural eastern North Carolina. The community hospital had a back injury rate of 30.56 per 1000 workers. No state or national statistic equivalent to this rate could be found. However, according to the National Health Interview Survey from 1997 to 2007, 17.9% of all injuries to the torso or spine and back were from external causes (National Center for Health Statistics, 2009). The hospital was considering a worker injury prevention program, known as "Diligent", for implementation at the time of this project to decrease employee back injuries. There is widespread agreement that evidence-based guidelines should be followed in the prevention and treatment of clients with LBP.

Methodology

A program evaluation was conducted in partnership with key hospital personnel at a community hospital to compare usual practice with best practice for the prevention and management of LBP among hospital workers. This senior honors project was one part of a seven-week community health clinical rotation between January and February 2014. The staff

development nurse (SDN) served as the nurse preceptor for this clinical rotation. During this rotation, ten clinical objectives were successfully completed, and the senior honors project specifically addressed these clinical objectives. In addition, agency protocol and hospital regulations were followed throughout the clinical practicum.

This program evaluation had several major components, which included: a) conducting an environmental assessment, b) developing key informant questions, c) selecting and interviewing key informants, d) developing a matrix of findings, and e) determining similarities and differences between responses.

First, the environmental assessment focused on community vitality, social and economic conditions, health resources, environmental conditions, social functioning, and attitudes toward health. The local YMCA offered membership discounts to hospital employees, and a walking trail surrounded the hospital property.

Second, interview questions were developed with the assistance of two nurse experts to be used with each key informant. The interview questions were:

1. What is your current protocol in the prevention and management of LBP in injured workers?
2. Who do you collaborate with on plans of care for clients with LBP?
3. What resources do you provide on the prevention and management of LBP, and what are some examples of the resources/brochures given to clients?
4. What is your responsibility during the implementation of the new “Diligent” program?

Third, the SDN preceptor identified key hospital staff who worked in the area of preventing and managing LBP. Interviews were conducted with a(n): physical therapist, occupational therapist, rehabilitation specialist, employee health nurse, and staff development nurse. I also served as a participant-observer in the area of each key informant. In the area of

physical therapy I assisted with direct patient care in the out-patient and in-patient settings. In the area of occupational therapy I observed patient care in an out-patient setting. I assisted the employee health nurse with new employee assessments. In the area of staff development I observed worker training and education sessions.

Last, a matrix was developed that organized the four questions by key informants' responses. I analyzed the data to determine similarities and differences in responses to the interview questions. In collaboration with my preceptor I also analyzed the interview data to identify gaps between usual and best practice.

Findings

The main findings of this program evaluation were: a) nurses are not required to complete a pre-employment ergonomics assessment, but all employees must complete an ergonomics computer module annually; b) LBP cases are first seen by the employee health nurse and then the physician, if necessary; and c) there is no general hospital protocol in the prevention and management of LBP.

The community hospital currently lacks a comprehensive ergonomics assessment program for all new employees. Every position in the hospital has a job description, and newly hired employees are expected to fulfill all of the job requirements. Nurses, in particular, must be able to lift at least 30 pounds, stand for multiple hours each day, and perform the additional physical demands of the position. However, nurses are not required to complete an ergonomics assessment prior to beginning work at this hospital. Nursing assistant and technician positions are contingent upon successful completion of the ergonomics assessment. This assessment tests employees on proper lifting techniques and assesses their ability meet the physical demands as outlined in the position requirements. Nurses are excluded from this policy, yet all employees must complete the annual computer-based learning module on proper ergonomic techniques. The

computer module only requires the employees to complete a post-test on the information, and no demonstration of ergonomic competency is required.

If an employee experiences LBP at the hospital he/she must first see the employee health nurse. The nurse will decide if the employee needs to be directed to the employee health physician who will then determine the course of treatment. The referral service is limited to physical therapy and occupational therapy only. The physician will not refer employees with LBP to CAM therapies, such as chiropractic or massage therapy. If the employee is covered by worker's compensation the insurance company will not cover the cost of CAM therapies.

The hospital also lacks general protocol on the prevention and management of employees with LBP. No policies and procedures dictate the course of action for employees experiencing this injury. There is discipline-specific and injury-specific management of LBP, as the appropriate treatment is dependent on many variables including the mechanism of injury, type of injury, and location of injury.

Discussion

It is evident that back injuries are a major problem for employees at this eastern North Carolina hospital. There are actions the hospital can take to lower the incidence rate and prevent LBP in employees. Implementing a hospital-wide injury prevention program is crucial to changing the hospital culture and current practices. This requires the development of new policies, incorporation of lifting equipment, and formation of educational sessions for all employees. The hospital can also mandate that all positions are contingent upon successfully completing a pre-employment ergonomics assessment. This requires the worker to safely demonstrate their ability to lift a certain amount of weight, demonstrate proper lifting techniques, and meet the physical demands as stated in the job description. The hospital should also develop a computerized documentation system for employee injuries. This would allow the hospital to

monitor all workplace injuries, track the progress of individual cases, and compare rates to previous data. Finally, employees need to be reminded of the importance of back safety on a regular basis. By incorporating “cues to action” posters and employee coaches in key locations in the hospital, employees can remain alert to back injury prevention protocol. Evidence-based practices are critical to preventing and managing LBP in hospital employees. A transition from usual practice to best practices will minimize workplace injuries and further health complications.

References

- Barnes, P. M., Bloom, B., & Nahin, R. L. (2008). *Complementary and alternative medicine use among adults and children: United States, 2007*. Retrieved from <http://nccam.nih.gov/news/camstats/2007>
- Bishop, P. B., Quon, J. A., Fisher, C. G., & Dvorak, M. F. S. (2010). The chiropractic hospital-based interventions research outcomes (CHIRO) study: A randomized controlled trial on the effectiveness of clinical practice guidelines in the medical and chiropractic management of patients with acute mechanical low back pain. *The Spine Journal*, 10(12), 1055-1064. doi:<http://dx.doi.org/10.1016/j.spinee.2010.08.019>
- Broom, A., F., Kirby, E., R., Sibbritt, D., W., Adams, J., & Refshauge, K., M. (2012). Use of complementary and alternative medicine by mid-age women with back pain: A national cross-sectional survey. *BMC Complementary & Alternative Medicine*, 12(1), 98-104. doi:10.1186/1472-6882-12-98
- Bureau of Labor Statistics. (2013, November 26). *Nonfatal occupational injuries and illnesses requiring days away from work, 2012* [Press Release]. Retrieved from <http://www.bls.gov/news.release/pdf/osh2.pdf>
- Carey, T. S., Freburger, J. K., Holmes, G. M., Jackman, A., Knauer, S., Wallace, A., & Darter, J. (2010). Race, care seeking, and utilization for chronic back and neck pain: Population perspectives. *The Journal of Pain*, 11(4), 343-350. doi:10.1016/j.jpain.2009.08.003
- Cherkin, D. C., Sherman, K. J., Kahn, J., Wellman, R., Cook, A. J., Johnson, E., ... Deyo, R. A. (2011). A comparison of the effects of 2 types of massage and usual care on chronic low back pain. *Annals of Internal Medicine*, 155(1), 1-W3. Retrieved from <http://annals.org/>

- Chong, O. (2006). An integrative approach to addressing clinical issues in complementary and alternative medicine in an outpatient oncology center. *Clinical Journal of Oncology Nursing*, 10(1), 83-8. Retrieved from <http://www.ons.org/publications/CJON>
- Dryden, T., Baskwill, A., & Preyde, M. (2004). Massage therapy for the orthopaedic patient: A review. *Orthopaedic Nursing*, 23(5), 327-332. Retrieved from <http://journals.lww.com/orthopaedicnursing/pages/default.aspx>
- Dunn, A. S., Green, B. N., Formolo, L. R., & Chicoine, D. (2011). Retrospective case series of clinical outcomes associated with chiropractic management for veterans with low back pain. *Journal of Rehabilitation Research and Development*, 48(8), 927-934. Retrieved from <http://www.rehab.research.va.gov/jrrd/>
- Ernst, E. (2008). Chiropractic: A critical evaluation. *Journal of Pain and Symptom Management*, 35(5), 544-562. doi:10.1016/j.jpainsymman.2007.07.004
- Fowler, S., & Newton, L. (2006). Complementary and alternative therapies: The nurse's role. *Journal of Neuroscience Nursing*, 38(4), 261-4. Retrieved from <http://www.aann.org/journal/content/index.html>
- Hasan, H., Ismail, H., Azidin, R.H. (2010). Preventive methods of low back pain. 2010 *International Conference on Science and Social Research (CSSR)*, 1, 1278-1282. doi: 10.1109/CSSR.2010.5773733
- Hughes, C. M., Quinn, F., & Baxter, G. D. (2011). Complementary and alternative medicine: Perception and use by physiotherapists in the management of low back pain. *Complementary Therapies in Medicine*, 19(3), 149-54. doi:<http://dx.doi.org/10.1016/j.ctim.2011.03.003>

Imamura, M., Furlan, A. D., Dryden, T., & Irvin, E. (2008). Evidence-informed management of chronic low back pain with massage. *The Spine Journal*, 8(1), 121-133.

doi:10.1016/j.spinee.2007.10.016

Lind, B. K., Lafferty, W. E., Tyree, P. T., Sherman, K. J., Deyo, R. A., & Cherkin, D. C. (2005).

The role of alternative medical providers for the outpatient treatment of insured patients with back pain. *Spine*, 30(12), 1454-1459. Retrieved from

<http://journals.lww.com/spinejournal/pages/default.aspx>

National Center for Health Statistics. (2009). *Injury episodes and circumstances: National health interview survey, 1997-2007*. Retrieved from

http://www.cdc.gov/nchs/data/series/sr_10/sr10_241.pdf

Phelan, S. P., Armstrong, R. C., Knox, D. G., Hubka, M. J., & Ainbinder, D. A. (2004). An

evaluation of medical and chiropractic provider utilization and costs: Treating injured workers in north carolina. *Journal of Manipulative and Physiological Therapeutics*,

27(7), 442-448. doi:10.1016/j.jmpt.2004.06.002

Preyde, M. (2000). Effectiveness of massage therapy for subacute low-back pain: A randomized controlled trial. *Canadian Medical Association Journal*, 162(13), 1815-20. Retrieved

from <http://www.cmaj.ca/>

Sherman, K. J., Cherkin, D. C., Deyo, R. A., Erro, J. H., Hrbek, A., Davis, R. B., & Eisenberg, D. M. (2006). The diagnosis and treatment of chronic back pain by acupuncturists,

chiropractors, and massage therapists. *Clinical Journal of Pain*, 22(3), 227-234.

Retrieved from <http://journals.lww.com/clinicalpain/pages/default.aspx>

Williams, C. M., Maher, C. G., Hancock, M. J., McAuley, J. H., McLachlan, A. J., Britt, H., ...

Latimer, J. (2010). Low back pain and best practice care: A survey of general practice physicians. *Arch Intern Med*, 170(3), 271-277. doi:10.1001/archinternmed.2009.507.