American Psychological Association

APA Center for Psychology and Health

Briefing Series on the Role of Psychology in Health Care

Presurgical Psychological Evaluations for Spinal Conditions

- Spinal surgeries are performed in the United States at a rate up to five times higher than in any other developed country, even though spinal disease and injury are no more prevalent in the U.S. than elsewhere.[1]

- Even when spinal surgery appears to be successful, it does not necessarily improve patient functioning or satisfaction with care. In one study of lumbar fusion surgery, even though surgery was objectively successful in 84% of patients, following the surgery 49% had worse pain, 44% were dissatisfied with their outcome, and 38% were totally disabled at follow-up.[2] Another study found that opioid pain medication use actually increased following lumbar fusion surgery.[3]

- A number of psychological, social, and behavioral variables are known to affect the outcome of surgery,[4] and do so in the following ways:

    - » Emotional stress can affect both the inflammatory response and the immune system, both of which can negatively impact surgical outcome.[5]

    - » Depression increases the risk of nonadherence to physical therapy,[6] poor outcome,[6] and not taking medications as prescribed.[7]

    - » Depression prior to surgery has been shown to be a predictor of dissatisfaction with the outcome of the surgery.[8]

    - » Deep sleep promotes the release of growth hormones,[9] which the body requires for wound healing.[10] Emotional stress can interfere with recovery by reducing deep sleep, which also increases the risk of chronic pain.[11]

- A thorough review of the evidence determined that psychological tests are the scientific equivalent of medical tests.[12] In the case of spinal pain, studies show that psychological tests can be more predictive of surgical outcome than MRIs.[13,14] Standards for the psychological assessment of spinal patients have been established,[15] as have clinical protocols for assessment.[16-18]

- Research has provided strong evidence for which psychological variables predict surgical outcome,[19,20] and indicators of both moderate and severe presurgical risk factors have been identified.[4] Psychological evaluations

have been shown to predict not only spinal surgery outcome,[21] but also the outcome of other surgeries and medical treatments.[4]

- One state mandated a biopsychosocial system for treating injured workers. One part of this system was that psychological evaluations were recommended or required prior to a number of invasive procedures and other medical treatments.* These evaluations were used to help select appropriate patients for surgery versus conservative care. This approach reduced the duration of disability and was associated with an estimated $859 million savings in one year.[22]

* These medical treatments included lumbar fusion, back surgery if Waddell signs are greater than 2, artificial disk surgery, spinal cord stimulation, discography, facet rhizotomy, intradiscal electrothermal annuloplasty, some cervical and shoulder surgeries, chronic opioid therapy, biofeedback, and treatments for chronic pain and delayed recovery generally.

References

1. Cherkin, D.C., Deyo, R. A., Loeser, J. D., Bush, T., & Waddell, G. (1994). An international comparison of back surgery rates. *Spine* (est. in Philadelphia, PA, 1976), *19*(11), 1201-1206.
2. LaCaille, R. A., DeBerard, M. S., Masters, K. S., Colledge, A. L., & Bacon, W. (2005). Presurgical biopsychosocial factors predict multidimensional patient: Outcomes of interbody cage lumbar fusion. *The Spine Journal, 5*(1), 71-78.
3. Nguyen, T. H., Randolph, D. C., Talmage, J., Succop, P., & Travis, R. (2011). Long-term outcomes of lumbar fusion among workers' compensation subjects: A historical cohort study. *Spine* (est. in Philadelphia, PA, 1976), *36*(4), 320-331.
4. Bruns, D., & Disorbio, J. M. (2009). Assessment of biopsychosocial risk factors for medical treatment: A collaborative approach. *Journal of Clinical Psychology in Medical Settings, 16*(2), 127-147.
5. Kiecolt-Glaser, J. K., Page, G. G., Marucha, P. T., MacCallum, R. C., & Glaser, R. (1998). Psychological influences on surgical recovery. Perspectives from psychoneuroimmunology. *American Psychologist, 53*(11), 1209-1218.
6. Hicks, G. E., Benvenuti, F., Fiaschi, V., et al. (2012). Adherence to a community-based exercise program is a strong predictor of improved back pain status in older adults: An observational study. *Clinical Journal of Pain, 28*(3), 195-203.
7. Gehi, A., Haas, D., Pipkin, S., & Whooley, M. A. (2005). Depression and medication adherence in outpatients with coronary heart disease: Findings from the Heart and Soul Study. *Archives of Internal Medicine, 165*(21), 2508-2513.
8. Adogwa, O., Parker, S. L., Shau, D. N., et al. (2013). Preoperative Zung depression scale predicts patient satisfaction independent of the extent of improvement after revision lumbar surgery. *The Spine Journal, 13*(5), 501-506.
9. Vgontzas, A. N., Mastorakos, G., Bixler, E. O., Kales, A., Gold, P. W., & Chrousos, G. P. (1999). Sleep deprivation effects on the activity of the hypothalamic-pituitary-adrenal and growth axes: Potential clinical implications. *Clinical Endocrinology (Oxford), 51*(2), 205-215.
10. Schmidmaier, G., Wildemann, B., Heeger, J., Gäbelein, T., Flyvbjerg, A., Bail, H. J., & Raschke, M. (2002). Improvement of fracture healing by systemic administration of growth hormone and local application of insulin-like growth factor-1 and transforming growth factor-beta1. *Bone, 31*(1), 165-172.
11. Okura, K., Lavigne, G. J., Huynh, N., Manzini, C., Fillipini, D., & Montplaisir, J. Y. (2008). Comparison of sleep variables between chronic widespread musculoskeletal pain, insomnia, periodic leg movements syndrome and control subjects in a clinical sleep medicine practice. *Sleep Medicine, 9*(4), 352-361.
12. Meyer, G. J., Finn, S. E., Eyde, L. D., et al. (2001). Psychological testing and psychological assessment. A review of evidence and issues. *American Psychologist, 56*(2), 128-165.

13. Carragee, E. J., Barcohana, B., Alamin, T., & van den Haak, E. (2004). Prospective controlled study of the development of lower back pain in previously asymptomatic subjects undergoing experimental discography. *Spine, 29*(10), 1112-1117.

14. Carragee, E. J., Alamin, T. F., Miller, J. L., & Carragee, J. M. (2005). Discographic, MRI and psychosocial determinants of low back pain disability and remission: A prospective study in subjects with benign persistent back pain. *The Spine Journal, 5*(1), 24-35.

15. Bruns, D. (2014, December). Clinical and forensic standards for the psychological assessment of patients with chronic pain. *Psychological Injury and Law, 7*(4), 297-316.

16. Bruns, D., & Disorbio, J. M. (2014). The psychological evaluation of patients with chronic pain: A review of BHI 2 clinical and forensic interpretive considerations. *Psychological Injury and Law, 7*(4), 335-361.

17. Bruns, D., & Disorbio, J. M. (2013). The psychological assessment of patients with chronic pain. In T. R. Deer, Ed., *Comprehensive treatment of chronic pain: Medical, interventional, and behavioral approaches* (pp. 805-826). New York, NY: Springer.

18. Block, A. R., Gatchel, R. J. , Deardorff, W. W., & Guyer, R. D. (2003). *The psychology of spine surgery*. Washington, DC: American Psychological Association.

19. den Boer, J. J., Oostendorp, R. A., Beems, T., Munneke, M., Oerlemans, M., & Evers, A. W. (2006). A systematic review of bio-psychosocial risk factors for an unfavourable outcome after lumbar disc surgery. *The Spine Journal, 15*(5), 527-536.

20. Celestin, J., Edwards, R. R., & Jamison, R. N. (2009). Pretreatment psychosocial variables as predictors of outcomes following lumbar surgery and spinal cord stimulation: A systematic review and literature synthesis. *Pain Medicine, 10*(4), 639-653.

21. Block, A. R., Ohnmeiss, D.D., Guyer, R.D., Rashbaum, R. F., & Hochschuler, S. H. (2001). The use of presurgical psychological screening to predict the outcome of spine surgery. *The Spine Journal, 1*(4), 274-282.

22. Bruns D., Mueller, K., & Warren, P. A. (2012). Biopsychosocial law, health care reform, and the control of medical inflation in Colorado. *Rehabilitation Psychology, 57*(2), 81-97.

The American Psychological Association (APA) gratefully acknowledges the contributions of Daniel Bruns, PsyD (Health Psychology Associates, Greeley, CO), fellow of APA Division 38, Health Psychology, in developing this briefing sheet on presurgical psychological evaluations. This briefing sheet series is a joint project of APA and the Interdivisional Healthcare Committee, a coalition of health-oriented divisions within APA.