

R.D., Shah, S. Gitelis, R. Jagannathan, J Hajduk, G. De Oliveira, & S. Suresh

Department of Pediatric Anesthesiology, Ann & Robert H. Lurie Children's Hospital of Chicago

Northwestern University Feinberg School of Medicine, Chicago, IL

Background:

Chronic pain affects approximately 20-35% of children and adolescents worldwide and causes significant functional and psychological burden for patients and their families. There is a paucity of high quality evidence to guide pharmacological, behavioral, physical, and interventional treatments in pediatric chronic pain patients, leading to variability in practice among pediatric pain specialists. We conducted a survey study of North American pediatric pain programs to identify trends in healthcare provider and practice disposition, patient treatment modalities, and perceived outcome to treatment to ascertain similarities and differences in clinical practice.

Materials and Methods:

After receiving IRB exemption status, pediatric chronic pain treatment programs were identified in a list furnished by the American Pain Society and fifty-two programs were queried for participation. Clinical program directors were contacted between July 2016 and January 2017 to partake in the study and were sent the online survey via Survey Monkey software (Survey Monkey INC, Portland, OR, USA).

The survey consisted of twenty-four questions. Topics addressed included: (1) clinician training, (2) setting of practice, (3) board certification status, (4) referral base, (5) types and frequency of treatments, and (6) measurements of treatment outcomes. Data were exported into Microsoft Excel software (Microsoft INC, Redmond, WA, USA) and analyzed in three separate sections: (1) healthcare provider and practice characteristics, (2) patient treatment modalities, and (3) perceived outcome to treatment.

Results:

34 of 52 programs (65%) responded to the questionnaire. Most centers reported multimodal pharmacological strategies for treating neuropathic pain. Interventional treatments were reported at 91% of institutions and included trigger point injections, peripheral nerve blocks, and sympathetic blocks. Psychological interventions and physical therapy regimens were commonly utilized by all respondents, while complementary and alternative medicine treatments were rarely offered. The majority of respondents noted opioid use in their clinical practice, of whom 75% required a narcotic agreement or contract. Practitioners noted use of varying functional assessment measures in their practice and the majority of respondents noted "good" overall outcomes in their patients.

Figure 1. Pediatric Pain program directors that have completed fellowship training in pain medicine

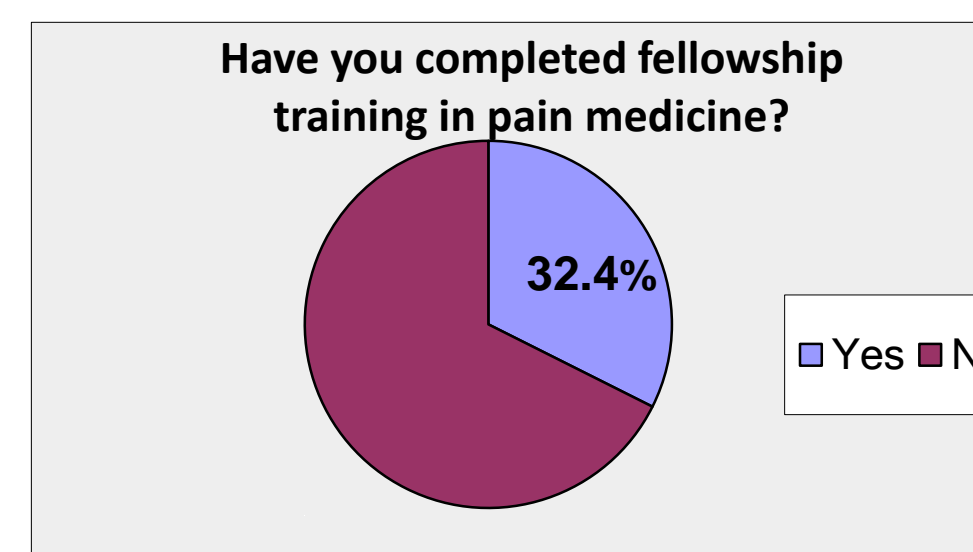
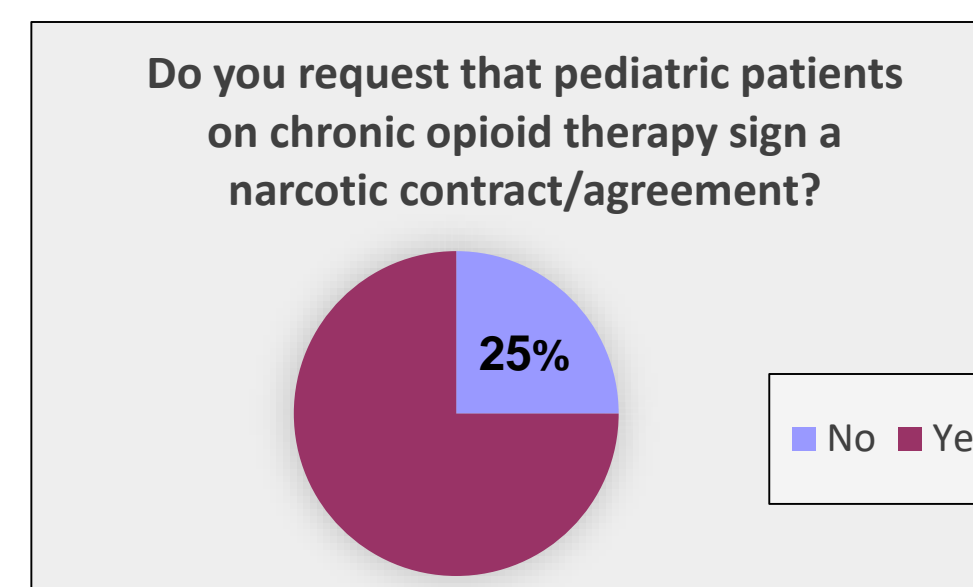


Figure 2. Opioid treatment agreement utilization patterns in pediatric pain programs



Procedural Treatments Performed for Chronic Pain Management

Answer Options	Response Percent
Neuraxial blocks/infusions	75.0%
Sympathetic Blocks (e.g. Stellate Ganglion/Lumbar Plexus)	50.0%
Peripheral Nerve blocks (upper and lower extremity)	68.8%
Peripheral Nerve Catheter with local anesthetic infusion	59.4%
Head and Neck Blocks	75.0%
Truncal Blocks (TAP, Ilioinguinal block)	62.5%
Trigger Point Injections	78.1%
Intrathecal drug delivery	18.8%
Intravenous Regional Anesthesia	25.0%
Epidural Steroid Injections	71.9%
No procedural treatments performed at your program	9.4%
Other (please specify)	18.8%

Specialty Field Referrals to Pediatric Pain Programs

Answer Options	Most Common	Second Most Common	Third Most Common	Response Count
General Pediatrics	11	4	6	21
Orthopedics / Sports Medicine	6	12	5	23
Neurology	4	9	7	20
Physical Medicine & Rehabilitation	2	0	1	3
Hematology / Oncology	3	3	3	9
Pediatric Surgery	2	0	3	5
Rheumatology	9	7	6	22
Adult Pain Physician	2	0	2	4
Other (please specify and rank)				10

Figure 3. Referral patterns to pediatric pain programs by medical specialty

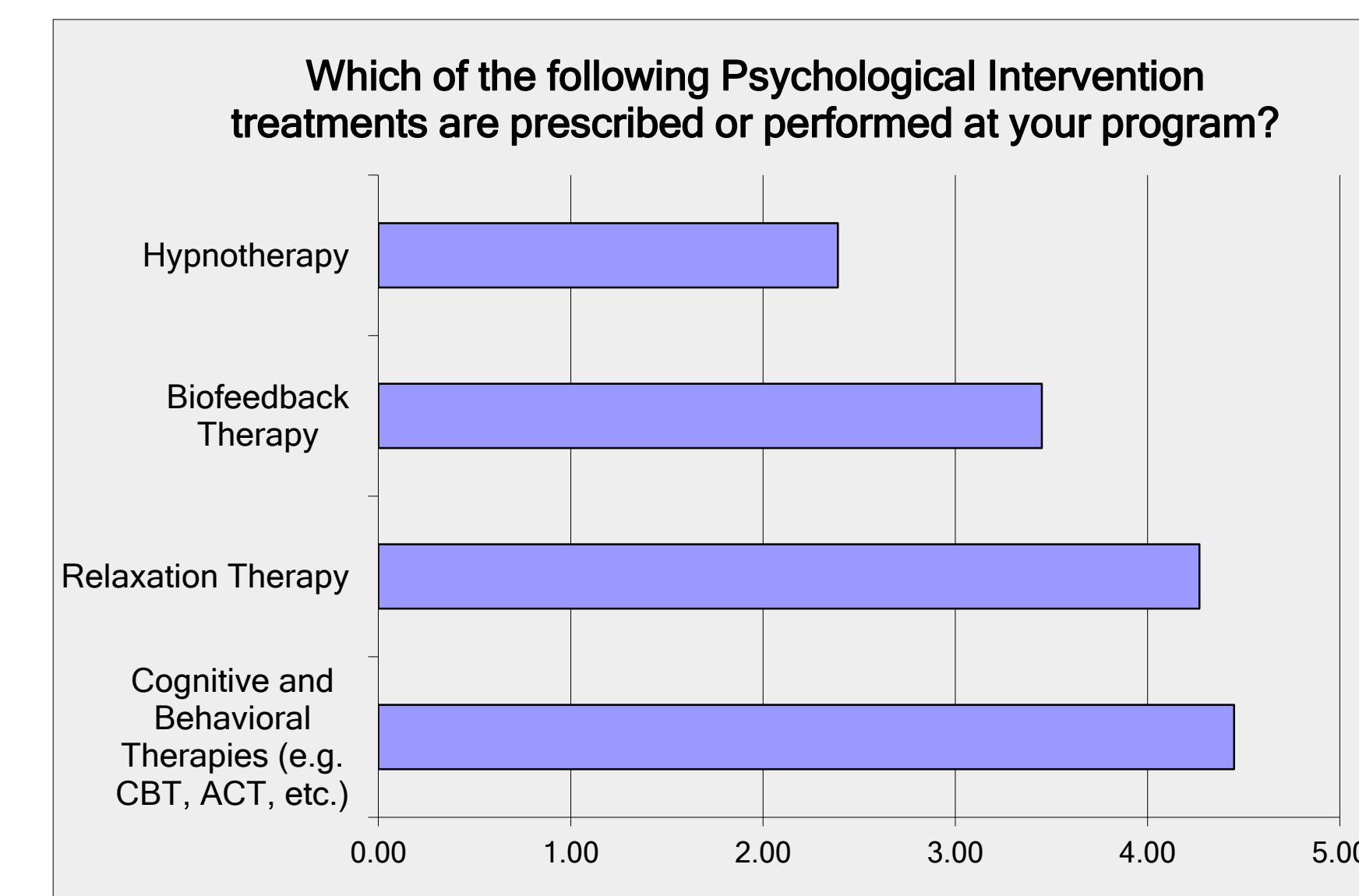


Figure 4. Psychological treatments performed at surveyed pediatric pain programs

Discussion:

Management and treatment of pediatric chronic pain varied significantly between programs which was expected given the lack of high-quality evidence to guide patient management. The majority of surveyed treatment centers noted opioid use in clinical practice, 75% of which require a narcotic agreement/contract. The utility of interventional procedures in pediatric chronic pain management is supported only by case reports and limited randomized controlled studies. Survey responses, however suggest that certain procedures are still offered at the majority of centers. The common use of both trigger point injections and head and neck blocks may reflect the respectively high prevalence of myofascial pain and headache syndromes in the pediatric population. Peripheral nerve blockade was commonly utilized and has been described as a means to facilitate physical therapy, including movement desensitization. Sympathetic blockade, which is commonly utilized as a diagnostic and therapeutic intervention for CRPS-I in adults, was offered by 56% of respondents. This is noteworthy considering the lack of data to support its use in children.

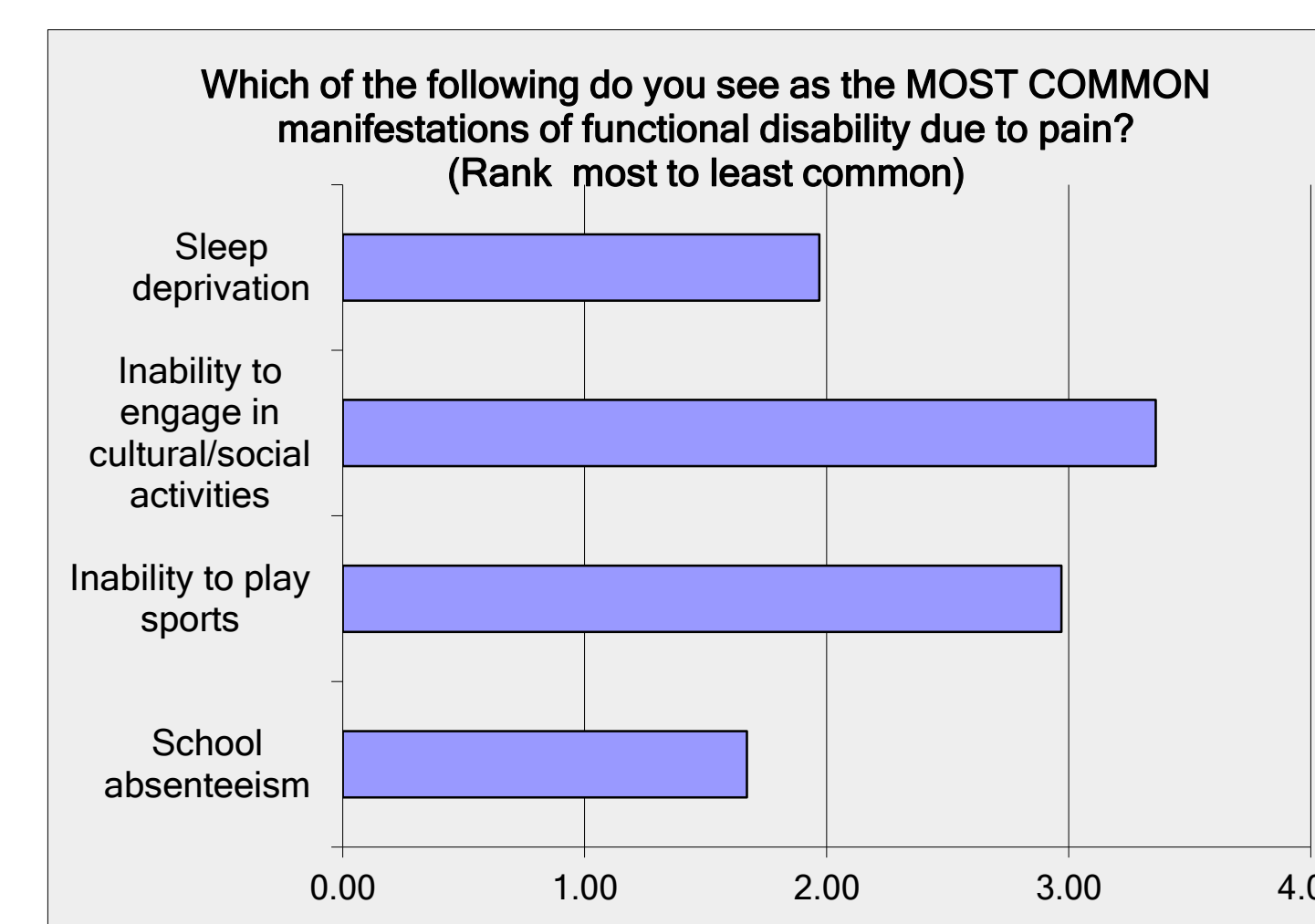


Figure 5. Psychological treatments performed at surveyed pediatric pain programs

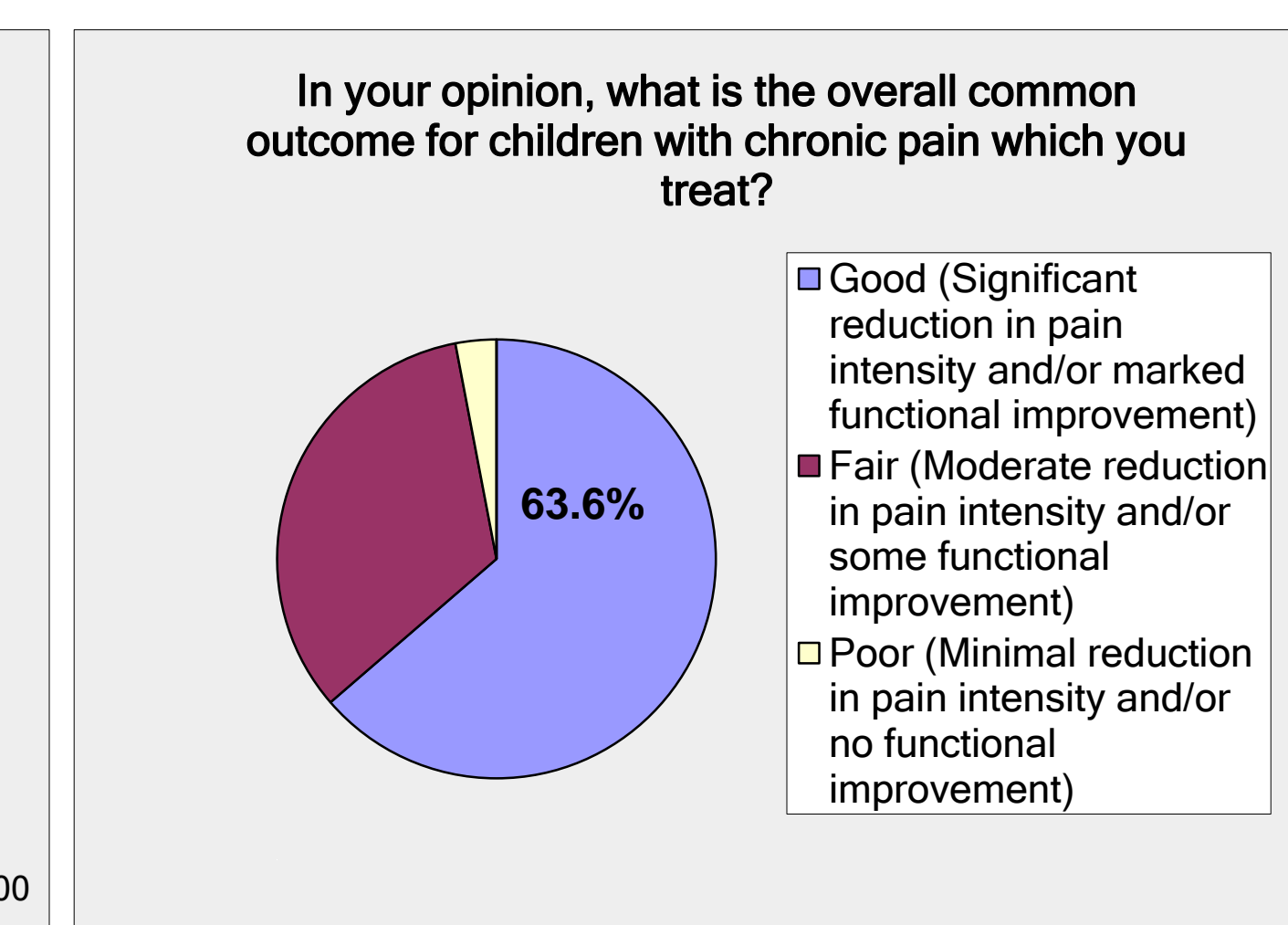


Figure 5. Perceived outcomes of pediatric chronic pain treatments

References:

1. Lioosi C, Howard RF. *Pediatrics*. 2016;138
2. King S et al. *Pain*. 2011;152:2729-2738.
3. Perquin CW, et al. *Eur J Pain*. 2003;7:551-559.
4. Bhatia A et al. *Paediatr Anaesth*. 2008;18:957-966.
5. Schechter NL, Walco GA. *JAMA Pediatr*. 2016;170:425-426.