Complementary Therapies in Medicine 38 (2018) 79–84

Contents lists available at ScienceDirect

Complementary Therapies in Medicine

journal homepage: www.elsevier.com/locate/ctim

A cross-sectional review of the prevalence of integrative medicine in pediatric pain clinics across the United States

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ARTICLE INFO

Keywords:
Pediatric chronic pain
Pediatric pain clinics
Chronic pain programs
Integrative medicine
Prevalence

ABSTRACT

Purpose: This project assesses the prevalence of integrative medicine (IM) in pediatric pain clinics (PPCs) across the United States.

Methods: PPCs were identified through the American Pain Society and cross referenced through the International Association for the Study of Pain (IASP). A cross-sectional review using each PPC's website was then utilized for further information. We collected data regarding each program's target population, non-profit status (where non-profits were designated as hospitals that do not operate for-profit purpose, and private as institutions receiving private funding), location, services provided and participating providers. Descriptive statistics were used for data analysis.

Results: Of the 53 PPCs identified, 43 (81%) were part of a non-profit healthcare organization, and 10 (19%) were within a private hospital; 85% were located in urban settings, 15% in rural settings; 83% were located in free-standing children's hospitals. Thirty-two (60%) PPCs utilized IM, including acupuncture (38%), mind-body (21%), massage (21%), aromatherapy (19%), nutrition counseling (17%) and/or art/music therapy (11%). The most prevalent providers within PPCs offering IM were yoga instructors (84%), nutritionists (56%) and mind-body specialists (44%). IM was offered in 63% of programs in non-profit organizations and 50% in private hospitals; 58% of urban sites and 75% of rural sites. Within each region, 91% (n = 10) of PPCs in the West offer IM, 53% of PPCs in the Midwest (n = 10) and Northeast (n = 8) offer IM and 50% (n = 4) of PPCs in the South offer IM compared to PPCs who do not.

Conclusions: Of 53 current identified PPCs, over half offer IM services. While children in the US are more likely to find a PPC offering IM services, access to do so is more limited in rural and southern regions.

1. Background

Chronic pain is estimated to affect between 20 and 35% of children worldwide, and Integrative Medicine (IM) use has become highly prevalent in this patient population.[1] Complementary and IM is an approach to treatment that takes a patient's complete physical, emotional, social and spiritual influences into account when providing care. IM therapies have been found to be efficacious and safe in children.[2] The purpose of this study is to identify the prevalence of IM in existing pediatric chronic pain clinics in the United States and to identify what types of integrative services are being offered.

According to the National Institutes of Health, approximately 12% of children surveyed in 2017 reported using some form of complementary and IM. In children, deep breathing exercises were the third most common integrative service children had tried (2.2%). Use of IM substantially increases to 50% for children with chronic conditions, including chronic pain.[3] The most common IM services used by children with chronic pain include mind-body training, acupuncture, and massage.[4]

Mind-body therapy training is prevalent among IM programs at allopathic hospitals and institutions. Mind-body therapy is defined as a set of techniques meant to engage the mind in a way that benefits the body. This includes using psychological, spiritual, and behavioral approaches in order to influence positive change. Examples of mind-body therapies include biofeedback, hypnosis and meditation.[5] Training children in these therapies is a recent and growing trend in facilities offering IM services. In a 2007 study by Vohra et al, 16 of 143 accredited medical schools had pediatric integrative medicine (PIM)

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https://doi.org/10.1016/j.ctim.2018.05.001
Received 21 March 2018; Received in revised form 2 May 2018; Accepted 2 May 2018
Available online 04 May 2018
0965-2299/ Published by Elsevier Ltd.

programs. Of those 16, 13 (81%) offered mind-body therapies to their patients. This was the most common service offered along with acupuncture.[6]

Use of acupuncture is another promising IM therapy for children with chronic pain, as its practice has been shown to improve outcomes for patients with chronic pain.[7] In 2005, Lin et al, completed a survey on forty-three pediatric anesthesia fellowship programs. Thirty-eight offered one or more complementary and alternative medical therapies for their patients. According to his findings, acupuncture had a prevalence of 33%.[8] Kemper et al, found that, despite the use of needles in acupuncture treatment, children are accepting of acupuncture, particularly when it is used to alleviate chronic pain. In a study assessing the practicality and value of acupuncture, twenty out of thirty (67%) children and adolescents surveyed reported a positive experience. Further, 70% of children/adolescents believed the treatment improved their chronic pain. In both these assessment, parents responded even more positively to the effect of acupuncture on their child.[9] Thus, use of acupuncture to treat chronic pain in pediatrics is feasible, safe[10] and effective, which is why it is being adopted in pediatrics.[11]

In 2007, one percent of children reported having received a massage in the last twelve months.[12] In 2005, Lin et al found that massage services were present in 35% of pediatric anesthesia programs.[13] In Vohra's 2007 study of 16 pediatric integrative centers, 11 (69%) centers offered massage therapy to their pediatric patients.[14] This is because massage therapy has proven to be effective at alleviating chronic pain, even in children, leading to improvements in their levels of distress, pain, tension, discomfort, and mood.[15]

Pediatric pain clinics (PPCs) have been established across the country in order to address this problem using different allopathic, integrative and psychological services and providers.[16] However, it is not certain how accessible IM is to children with chronic pain. Previous research from 2014 indicates that IM users are most likely to be white children from highly educated families,[17] and we would like to investigate other demographics accessing IM, particularly lower income families who may not be able to afford these services in an outpatient setting.

We hypothesize based on the previous data that IM therapies will be provided by the majority of PPCs to treat chronic pain in children. PPCs, whether or not they offer IM, will be mostly located in urban settings or as a part of university medical centers with a large catchment areas because there is a larger population of people to give and receive these services. We also hypothesize that mind-body therapies, acupuncture and massage will be the most popular IM therapies provided. We hypothesize that non-profit hospitals that care for patients affected by health disparities and accept public insurance will provide fewer IM services and staff compared to private hospitals. Private hospitals will also staff more IM providers due to their financial ability.[18]

After assessing these data, we hope to gain a better understanding of the options available to American children with chronic pain have when seeking medical attention. We also hope to understand where children can access IM, and what types of IM therapies are most commonly offered to them in PPCs. We will compare these IM services to the allopathic and psychological therapies offered. This information may provide the healthcare sector with a more informed idea of how children access therapies to treat chronic pain.

2. Methods

2.1. Data source

Established PPCs were found through the American Pain Society (APS) website. Through their registry of PPCs, we identified 53 PPCs within the US. To ensure we identified all PPCs located in the US, we also cross referenced the International Association for the Study of Pain (IASP) website, which also registered 53 PPCs within the US. By this way, we confirmed the existence of 53 PPCs within the United States.

Prior to extracting data from the websites, the study team predetermined the variables to be collected and a REDCap database was created. Two RAs (KB and KM) independently extracted data from the 53 PCCs existing web sites and compared findings to check for inconsistencies or missing data. All 53 PCCs had active websites. Data were collected and recorded on our variables of interest through website review. This project did not require approval from the Institutional Review Board at Boston University Medical Center.

2.2. Exposure to services and treatments offered at PCCs

Through extraction of each PPC website, we recorded the services and treatments each PPC offered to its patients. We categorized these services as integrative, allopathic, and psychological.

IM services included acupuncture, mind-body strategies, massage, aromatherapy, nutrition counseling, yoga and art/music therapy. Mind-body strategies include facilitating biofeedback, hypnosis, relaxation training and meditation. All integrative services were attributed to PPCs if they were explicitly listed on their website.

Allopathic services included medical rehabilitation, medication management and interventional pain management. Medical rehabilitation includes any physical therapy, occupational therapy and aquatic therapy services offered at the PPC. Medication management was defined as providing prescriptions or medication to patients. Interventional pain management services included receiving injections to stimulate nerve blocking, providing pain pumps to administer medication at a consistent rate and receiving electrical stimulation all for the purpose of reducing pain. These allopathic services were attributed to PPCs who explicitly listed them on their website.

Psychological services included providing counseling/cognitive behavior therapy and family therapy. These services were attributed to PPCs who explicitly listed them on their website.

2.3. Main covariates

First, we extracted data about the general characteristics of the clinic. Non-profit PPCs were defined as PPCs located within hospitals/community health centers that do not operate on a for-profit basis. Private PPCs were defined as PPCs located in medical institutions that receive private funding from charitable sources. We also took note if these clinics were located in free-standing children's hospitals, defined as a hospital that is specifically designed to accommodate pediatric populations with a membership to the Children's Hospital Association (CHA), which has a designated website listing institutions within their network. Clinic setting was defined as urban or rural based on location; an institution was considered to be urban if located in a city setting with 50,000 or more people while rural institutions were located in less population-dense areas with a population of less than 50,000. We defined four regions to categorize their location within the U.S.: Midwest, Northeast, South and West.

Other variables included inpatient or outpatient setting and age groups for which each PPC offered their services. We created five age groups: early childhood (ages 0–5 years old), children (ages 6–12 years old), adolescents (ages 13–17 years old), young adults (ages 18–21 years old), and adults (ages 22 + years old). PPC websites which did not specifically name an age group were categorized as "not specified". For those PPCs that did have defined target populations, we assessed which age groups were provided services. Finally, we assessed which PPCs accepted public insurance. Websites that did not provide this information were categorized as "Not Available".

We categorized clinical providers at each PPC. We credited the type of staffing of providers for each PPC only if these providers were explicitly listed on their website.

We recorded staffing of integrative therapy providers based on available information for each PPC website and categorized them based