Demographic Profile of Chiropractors and their Pediatric Patients in Cyprus: A Cross—sectional Survey

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ABSTRACT

Background: Pediatric chiropractic care is a popular special interest within the chiropractic profession. Ongoing observational research is important for gathering demographic information on this patient population as well as characteristics of the chiropractors that provide such care. This study investigated the profile of pediatric chiropractic patients in Cyprus and the chiropractors who treated them over a four-month period in 2019 and 2020. Method: All 16 members of Cyprus Chiropractor's Association (CyCA) were invited to participate in the two-part observational cross-sectional study. Retrospective data of pediatric patients was anonymized and a separate chiropractor's characteristics survey was completed. Results: One hundred and fifty-one pediatric anonymized case records were collected from nine Cypriot chiropractors in the interval November 2019 - February 2020. Patient characteristics showed a slightly higher male to female ratio of cases with adolescent and school age groups having the biggest representation for musculoskeletal (MSK) issues followed by infants with a variety of conditions. Positive outcomes in terms of physical activity levels and reduction of pain were reported by patients within one to five treatments. Data shows a male dominance (11 males:5 females) in the CyCA organization. However, there were equal numbers of male and female chiropractors (5 of each) treating pediatric cases. All chiropractors were graduates of USA, Australian and UK institutions. Members had an average of 23.8 (SD=13.19) years in practice. All chiropractors reported advanced degrees in pediatric practice or had updated continued professional development. Conclusion: The country of Cyprus has one of the smallest chiropractic associations in the world with only 16 members. Nevertheless, both the demographic profiles of the chiropractors and their pediatric patients revealed strong similarities to other European chiropractic practices. Demographic studies every five years would be beneficial for making longitudinal observations and recommendations for the Cyprus Chiropractic Association (CyCA) in addition to comparing international results.

Introduction

Pediatric chiropractic care is a popular special interest within the chiropractic profession. While there is strong clinical evidence for efficacy of chiropractic care in general, there is less evidence for the use of chiropractic care for children. Understanding the characteristics of chiropractic practitioners and the kids they treat is relevant and can add to the research base. Ongoing observational research, including national surveys are important for gathering demographic information on this patient population, their conditions and age groups, as well as characteristics of chiropractors that provide such care. Collecting such information can help to shape chiropractic education and advise others on the scope of chiropractic practice. Additionally, highlighting the practice and treatment characteristics of the profession within the wider pediatric health landscape will provide a more comprehensive understanding of where such specialized practice sits within this bigger picture.

To date, existing cross-sectional studies have provided demographic information, referral patterns to and from a chiropractor, medications prescribed by medical doctors, conditions seen, duration of care and satisfaction rates. However, despite some work in this area, there remains a paucity of global or regional cross-sectional surveys of representative samples of pediatric patient profiles within the chiropractic profession and none in Cyprus. Therefore, this study will address the lack of demographic /characteristics data from both chiropractors and their pediatric patients within the country of Cyprus. The purpose of this study was to build upon the existing European chiropractic pediatric demographic studies in order to potentially inform the national association and wider pediatric arena.

Currently only a single multinational paper focused specifically on chiropractors delivering pediatric care was identified.¹ In a globally focused scoping review for the entire chiropractic profession, Beliveau et al., (2017) reported details from a small number of pediatric studies.² While some of this information is present for North America and Europe, consistency across the seven world regions adopted by the World Federation of Chiropractic (Africa, Asia, East Mediterranean Middle East (EMMME), Europe, Latin America, North America and Pacific region) is not available.

In Europe only a small number of cross-sectional studies investigating pediatric patients attending a chiropractic clinic to receive chiropractic care have been completed but the majority of these surveys make a call for further research.^{3,4}

The ramifications of musculoskeletal (MSK) conditions are well known and accepted as a global public health issue. Acknowledging the MSK impact on physical health and mental health in all ages is important.⁵ However, this information has not been as well documented for the pediatric population. Research suggests that addressing such issues in a timely manner is essential to avoid chronicity of such issues.⁶ Recent studies indicate that the assessment of pain and functional abilities is useful for all doctors to identify. This information can help support those suffering with multimorbidity in receiving an appropriate and timely diagnosis. It can also help patients get correct treatment of their MSK conditions.⁷

According to the available chiropractic demographic studies in pediatric age groups, the majority seek chiropractic care for MSK issues.8 In a pan-European study, 57% of the total complaints were classic MSK issues, including neck and back pain as well as extremity sprains and strains.⁹ Appropriate documentation of each case includes information such as injury or episode onset, duration, previous care and treatment outcome. This also helps highlight the cases that are more prone to become chronic and may need multidisciplinary care. In addition, documentation of the number of treatments, satisfaction outcomes and success rates (both short-term and longterm) are equally important information. This data can help determine the cost-effectiveness of chiropractic care and show how utilizing this treatment could potentially reduce the MSK burden on each country.¹⁰

Hestbaek et al., (2009), Miller (2010) and Mokseness and Miller, (2017) identified similar findings of MSK complaints being common to all ages except in infants that typically presented to chiropractic offices with complaints of excessive crying or colic.^{4,11,12} In four out of six European studies on chiropractic care for pediatrics, the most common age groups requiring chiropractic care were infants and young toddlers, 0-23 months.^{34,11,12} Adolescent age groups, represented a bigger proportion of the pediatric population treated by chiropractors in two other studies.^{8,9} Thus, at present, there is a mixed picture of the most common age group presenting to a European chiropractor. It appears that infants and adolescents are the most commonly seen age groups.

Methods

The method of choice for this paper was an observational retrospective cross sectional design to examine the demographic and characteristic profile of children presenting to chiropractic offices and the chiropractors delivering their care. The period of November 2019 to February 2020 was chosen to observe. This was the last four months prior to the Covid-19 Pandemic lockdown in the country of Cyprus. Cypriot chiropractic patients' aged 0-17 years of age whose first consultation had taken place within that timeframe even if their treatment plan was not completed, were chosen to study, These patients were chosen to allow for a wide range of cases for this study.

The recruitment of chiropractors to participate in the study was done via communication with the Cyprus Chiropractor's Association (CyCA). All of the CyCA members were invited to voluntarily participate in this two-part study. The first part was completion of the chiropractor's characteristic survey. The second part was completion of the pediatric demographic questionnaire, for the eligible patients.

All personally identifying data was removed before delivery to the researcher. This information was collected by the individual chiropractor and recorded in an Excel spreadsheet. It was saved on a password protected USB stick to be kept secured for a minimum of 12 months or until publication of the study and then destroyed. Ethical approval was obtained via the AECC university committee and the Cyprus Bioethics committee.

Results

All 16 CyCA members completed and returned the survey (100%; N=16). Nine of the members were treating pediatric cases. 69% (N=11) of the CyCA association doctors were male. The years in practice for all CyCA members varied from 5-40 years, with no recent graduates. The CyCA had 44% (N=7) of its members who graduated from USA schools, 44% (N=7) graduated from UK schools and 12% (N=2) received their DC degree from Australian institutions. In this study, pediatric cases represented less than 10% of the total patient load for the CyCA members.

All nine Chiropractors who reported treating children had some further training in chiropractic pediatric post graduate education, either as a single or series of Continued Professional Development (CPD) courses. One member had a MSc in this area. During the study period, one member who would normally be seeing pediatric patients was not included as there were no relevant cases. Of the nine chiropractors in the study, the four male chiropractors saw a range of pediatric cases who were school age and adolescent ages with primarily sports-related complaints. This was compared to the five female chiropractors who saw mostly infants as well as the other age groups.

Pediatric cases

The results were based on 151 pediatric cases aged 0-17 years. Most commonly reported reasons for these children receiving chiropractic care were MSK conditions such as

neck/headaches, lower back and extremity injuries. The ages of those with these MSK complaints were school age (N=31) and adolescent (N=80). In the infant (N=22) category, colic pain, sleep and feeding issues were the most common conditions.

Chronicity was highlighted both in the school age and adolescent groups where this was defined as pain or discomfort that continues for more than 12 weeks. This chronicity affected the levels of physical activity in 51.6% (N=78) of the patients. In the adolescent group, 17 patients made regular use (at least 1/per week) of painkillers for their particular MSK issue.

In total, 53% (N=85) of the sample population had previously seen another health practitioner for the same condition. These included a pediatrician (N=25), physiotherapist (N=24) or orthopedist (N=20). The referral pattern in the country of Cyprus to a doctor of chiropractic was predominantly by friends and family members who themselves had previous experience with chiropractic care (66%, N=101). In total, 19% of referrals were directly from other healthcare professionals (pediatrician, physiotherapist, podiatrist and orthopedists). Only 15% of the total referrals were directly from sports coaches, dance teachers or personal trainers.

Chiropractors referred 16% of the total sample for comanagement with other healthcare providers, particularly in cases of scoliosis (co-managed with orthopedists) and infancy related conditions (co-managed with pediatricians).

On average most conditions seen in the pediatric population were treated by the chiropractors for 1-5 sessions (N=108). In the time frame November 2019-February 2020, 67 of these pediatric cases were said to have been completed successfully. Success was measured in terms of symptom reduction and increase in physical activity levels (where appropriate).

Most chiropractors in this CyCA study provided exercise (N=106) and nutritional advice (N=19) and age-appropriate neurodevelopmental rehabilitation (N=12) in addition to their in-clinic care.

Discussion

Four other studies have previously reported on the profile of chiropractors who treat pediatric patients.^{1,9,13,14} No other studies achieved a 100% return rate, although they did have a much larger potential population. Low response rate is commonly seen in cross sectional studies and this can have an impact on the strength of evidence. Although other studies had significantly larger numbers, the population of Cyprus chiropractors are represented well with a 100% response rate for the pre-covid 19 period November 2019February 2020. In this study, the majority of chiropractors were male. This is similar to other national studies. More than half of the 16 CyCA members have been treating pediatric cases. Male chiropractors demonstrated more focus on sport-oriented school age and adolescent cases whereas females treated all ages including infants. All the doctors of chiropractic were graduates of European, USA and Australian schools with some undergraduate pediatric education and additional postgraduate pediatric education in the form of CPD's from accredited European or USA courses. This level of pediatric education could potentially explain why these children with these conditions were treated and had care outcomes that were similar to other European and USA cross sectional studies.

In terms of proportion of practice, 5-10% of Cyprus chiropractor's practices were made up of pediatric cases. Caseload was similar throughout most surveys with 8.2% in Europe, 8.7% in Switzerland and 8-15% in the rest of the world.^{1,2} Pohlman (2010) pointed out that specialty practices with pediatrics as a focus had a caseload of 31.7%.¹³ This again may be reflective of additional age-specific education that would be expected to be common in a professional specialty.

Age and gender of the pediatric patients treated were similar in Cyprus to all other studies, with a slight predominance of the male patient in bi-modal distribution peaking in the infant and adolescent age groups. This was also found in all other demographic studies. Infants are over-represented in mature chiropractic practices largely due to difficult births and difficulty with breastfeeding in the first days, weeks and months of age.¹⁵ Likewise, in the teen-age years, the MSK health may be compromised by athletic activities, sedentary lifestyle and an increase in stress levels.¹⁶

As in other studies, back, neck, headaches and extremity pain were the most typical conditions in the adolescent group (12-17years). The findings in this study for referral to chiropractic care echoes current literature. It also finds that family members or friends commonly recommended chiropractic care for MSK issues. In this study, the adolescent group was occasionally referred by other professionals (coaches, pediatricians) and they often reported pain on and off for more than three months. Adolescent-age patients also reported the use of analgesic or over-the-counter medication. They reported that their MSK complaints had a negative impact on their perceived level of physical activity (sports, leisure and activities of daily living). Chiropractic care resulted in improvement of function and reduction of pain within three and five treatments by which point the patient was discharged. This was determined by chiropractors' re-examination and patient reporting of increase in physical activity and decrease in initial pain using a VAS scale. Parents of the infants treated by these

chiropractors, reported a reduction of crying episodes, better sleep and better feeding habits as outcomes.

In addition to manipulative treatment, patient education information was given in the form of exercise and postural advice. Reflecting on the high percentage of families and friends referring pediatric cases, it can be hypothesized that there is a positive level of satisfaction for chiropractic care. Unfortunately, robust conclusions cannot be drawn as the members of CyCA did not formally record the level of satisfaction reported by parents/patients or guardians about the care and its outcome. This can be further developed in the future.

It is evident that there is some inter-professional referral pattern; however, this appears to be low. Most pediatric cases were brought to a chiropractor on the suggestion of family members that themselves had previous experience with chiropractic care.

Addressing public health issues such as chronic pain, physical health and obesity has been well supported by members of the CyCA. This can be seen from their care outcomes (addressing acute and chronic pain), advice provided (ergonomic/postural advice, exercise and health advice) and co-management referrals (e.g., nutritionist) to better patients' health.

Recommendations for the future

The World Federation of Chiropractic (WFC) estimated that the chiropractic population globally was 103,469 in 2017.¹⁷ A global study is needed to assess the exact number of chiropractors with special interest in pediatrics and to gather information on those patients' characteristics. A global cross-sectional study is needed to draw comprehensive conclusions.

Given the limited studies in this arena, some reference bias

exists as each article referenced and utilized the same sources. Repeated surveys are needed to gain information from new chiropractic professionals as well as more experienced ones and to observe any changes in presentations or practice patterns over time. Remaining up-to-date is essential in evidence-based practice, hence repeating such studies every five years can be recommended.

Limitations

This study was a small cross-sectional study using retrospective data. This study was originally intended to be prospective in nature but due to Covid 19, this was not possible. This may have limited the accuracy of demographics over the time period. Additionally, having the chiropractors self-complete the surveys assumes that correct details were included from each case and not completed from memory. Perhaps a prospective crosssectional study could have been better as the information would have been fresh in the chiropractor's notes and mind. However, the similarity of findings to much larger studies in the rest of the world suggests that chiropractic practice of pediatrics in Cyprus reflects global practice.

Conclusion

The country of Cyprus has one of the smallest chiropractic associations in the world with 16 total members. Nevertheless, both the demographic profile of the chiropractors and the patient profiles of their pediatric patients revealed strong similarities to the wider European chiropractic practice. Chiropractors in this study reported updated continued professional development or advanced degrees in pediatric practice. Pediatric patients presented to Cypriot chiropractors reported good results within one to five treatments. Demographic studies every five years would be beneficial for making longitudinal observations and comparing the results. Studying patient outcomes and rates of satisfaction are important dimensions for follow-up.

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