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Thank You for Persevering

By Sharon A. Vallone, DC, FICCP

It's a time of change. But then, in our world, change now seems to be the norm, not the exception. It is often a challenge to focus on our patient's health and well-being with the constant clang of the alarm and a call to arms to battle limited scope of practice restrictions, unjust exclusion from or limitations in insurance reimbursement, or defend the safety and efficacy of chiropractic care for our patients. It would be so much easier to keep our heads in the sand and ignore the appeal to step out of our comfort zone.

But when we take up arms and let out our war cry, we are focusing on our patient's health and well-being in a different way than perhaps how we feel we know best — with our hands, adjusting them. Instead, in these instances, we are challenged to develop another aspect of our healthcare practices — advocacy. When we take on any of these injustices, we are fighting for the rights of our patients to access their choice of natural healthcare for themselves and their families. When you pick up your phone and call your legislator or pick up your pen and write a letter to the editor, you are advocating for your patients and your right to practice the art, science and philosophy of chiropractic.

These are on some levels, frightening times. News reports circle about tragic and mysterious losses of many leaders in the alternative health care world. Parents' rights to choose the medical interventions they want or do not want are questioned and overturned in courts of law. States are reversing legislation that previously allowed families to have a choice in vaccinating their child based on philosophical or religious reasons, as well as medical reasons.

But we persevere. We are thankful to our leaders who step out of their offices and schools, lay down their own commitments and take on the work that helps preserve our right to practice chiropractic. We persevere thanks to their eloquence and knowledge about what we do, its safety and efficacy and the value of chiropractic as part of the national public health system. We persevere as chiropractors work alongside other healthcare providers educating, lobbying and collaborating to maintain communication and cooperation so that patients receive the best care that they can receive. We persevere thanks to our leaders in the field of research, the clinicians and publishers who author, edit and publish papers in an attempt to increase the data and clinical reports to support anyone inside and outside the profession who seeks to understand how to help their patients. We persevere as members of our state, national or specialty associations, supporting each other in fellowship. We persevere in our offices each day providing chiropractic to our community with integrity, continuing to study, learn and employ best practices for our patient's sake. We persevere.

I applaud you!

Respectfully and with gratitude

Maternal report of feeding practices: a cross-sectional survey of 1753 mothers presenting infants to a chiropractic teaching clinic

By Ann Kristin S. Homdrum, BSc, MSc[1] and Joyce Miller, BSc, DC, PhD[2]

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ABSTRACT

Objectives: The objectives of this survey were to investigate maternal choices to initiate or preserve exclusive breastfeeding and to map out the main domains of problems with feeding in infants in a population of mothers who presented their infant for chiropractic care. **Methods:** A cross-sectional survey of parents who presented their infants to a chiropractic teaching clinic. Each form was coded with a number and data entered into an Excel spread sheet. Two main software packages were used to analyze data; Microsoft Excel 2000 spreadsheet/SPSS-17 and GraphPad Instat Statistical analysis software. **Results:** In all, 1753 surveys were collected. Most mothers (88%) initiated breastfeeding. The mean age when mothers stopped breastfeeding was 3 weeks (SD=5.5). Among women who stopped breastfeeding (n=502), 197(39%) had routine vaginal births and 305 (61%) had assisted births. There was no statistically significant correlation between type of birth and feeding. There was a significant correlation (0.048) between when the mothers stopped breastfeeding and the lack of satisfaction with the breastfeeding experience. Of those mothers who stopped breastfeeding, mothers who planned to breastfeed while pregnant, breastfed for twice as long compared to the women who did not plan to breastfeed (p =.005). **Conclusion:** This population was representative of the UK population in that breastfeeding initiation rate was high and there was also significant early discontinuation. Further study is required to determine which factors might work toward helping new mothers continue in order to support public health initiatives to improve the health of mother and infant.

Introduction and Background

For most infants, breastfeeding remains the simplest, healthiest and least expensive feeding method that fulfills the infant´s nutritional needs.[1] Breastfeeding and suckling problems affect a significant number of newborns. When an infant cannot feed effectively due to an inability to suck or latch effectively, the benefits of breast milk and breastfeeding may be lost forever.

The practice of breastfeeding is advantageous for mother and baby in so many ways, but the choice to do so is dependent on a multitude of factors.[2] Lactation problems such as delayed onset of lactation and suboptimal breastfeeding behavior in infants are common, even among mothers who are highly motivated to breastfeed.[2] If the mother feels that she is unsuccessful in feeding her child, she may choose formula which has high risks for the short and long-term health of the child.[1]

UK feeding surveys have shown that initiation rates are high, but that mothers stop early.[3] The reason for failure of continuation of breastfeeding are complex and require individualized assessment and intervention.[4] According to a comprehensive breastfeeding assessment done by Hall et.al. in 2002, all infants should be assessed by a health care professional within 2-3 days of hospital discharge; however, this practice is not rigorously followed and possible consequences might be an increased incidence of readmission of breastfeeding infants for dehydration and jaundice as well as the cessation of breastfeeding.[4]

Lactation consultants, nurses and midwives routinely work with mother/infant dyads to optimize latch (attachment), ositioning and other factors that affect the ability of the infant to feed successfully. Unfortunately, even with these factors optimized, a significant number of infants cannot feed and mothers either search for other options to help, such as chiropractors,[5] or give up breastfeeding after weeks or even days due to the pain during the feeding process.

The health and well-being of children is a natural concern for all parents and societies. As a health conscious generation, we want the best for our children; yet with hectic lifestyles, the choice to breastfeed may be lacking despite the enormous number of benefits breastfeeding has for both mother and child. The benefits of breast milk is well documented in the literature and the World health Organization (2012) recommends exclusive breastfeeding for the first six months of life, with the gradual introduction of complementary foods and continuation of breastfeeding until two years or beyond.[1] Also, as early life is the critical time for primary prevention of obesity and other associated diseases[3] it is imperative to investigate postnatal feeding choices.[3]

The aim of this survey was to improve our understanding of feeding practices in mother/infant dyads that present to

a chiropractic clinic, including type of feeding and issues that surround changes in feeding practices, along with a wide range of feeding parameters.

Methods

In order to understand maternal-infant feeding practice, a cross-sectional survey was taken of mothers presenting their infants to a university-affiliated chiropractic clinic on the south coast of England. Inclusion criteria were all mothers who could read and write English who presented an infant to the clinic for care. Exclusion criteria were mothers who presented a child over 12 months of age or were not fluent in English. This study was approved by an independent ethics committee and consent was taken if the mother agreed to complete the form. All mothers signed a form stating they were willing to take part in a research study and all data were held anonymously.

The collected data were coded and entered into Excel spread sheet. Microsoft Excel 2000 spreadsheet/SPSS-17 and GraphPad Instat Statistical analysis software were used. SPPS-17 was used for data storage and these data were exported and analyzed using Instat.

Results

There were 1753 surveys collected and analyzed in this study. The demographic data for all the subjects are summarized in Table 1. Not all subjects answered every question. The total number (n) who answered each question is given in the results tables.

The mean age at presentation was 8.7 weeks (SD= 12.4 weeks). The most common age (mode) at presentation was four weeks. Ages ranged from two days to 12 months.

The mean gestational age was 39.2 weeks (SD= 3.1). The average birth weight was 3.45 kg (SD=1.1kg).

The two most common complaints at presentation were crying (38%) and feeding (17%), or other (38%). More than half of births were assisted (54%) and 46% were routine vaginal births. Most (64%) were first babies in the family and 36% were 2nd-5th child.

Overall, 88% of mothers initiated breastfeeding just after the birth. Of 1485 babies who responded to this question in the survey, 51% were breastfed, 33% formula fed and 16% both. If stopped breastfeeding, the mean age was 3 weeks (SD=5.5) (Table 2).

There was a significant correlation (0.048) between when the mothers stopped breastfeeding and the lack of satisfaction with the breastfeeding experience. Of those mothers who stopped breastfeeding, mothers who planned to breastfeed while pregnant, breastfed for twice as long compared to the women who did not plan to breastfeed (p=.005). Amongst women who stopped breastfeeding (n=502), 61% had assisted births.

A wide range of datum was collected regarding general feeding practices. We wish to report this as there was an intention to collect a broad range of data and report multiple parameters of infant feeding choices from mothers presenting to this type of clinic. As far as we know, this is the first attempt at such sampling. However, the response rate for many questions was low and therefore, this sample may not be widely representational of the broader population. Hence, these data are reported in an appendix for those who might be interested or planning further research in that area (Tables 3, 4, 5 - next page). These are included for the sake of completeness but are not analyzed further in this report.

Table 1. Demographic data of the infants presented to a chiropractic clinic

Demographic Data	Number (n) Responses	Missing	Mean	Standard Deviation (SD)
Age	n=1750	3	8.7 weeks	12.6 weeks
Birth weight	n=1664	89	3.45 kg	1.1 kg
Gestational age	n=97	97	39.2 weeks	3.2 weeks

Table 2. Maternal report of feeding length of time

Parameters	Number (n) Responses	Mean	Standard Deviation (SD)
How long have you BF so far	n = 1587	5.4 weeks	6.5 weeks
To what age do you plan to BF	n = 227	7.5 months	3.4 months
If stopped BF, at what age of baby	n = 504	3 weeks	5.5 weeks

BF = breastfed, breastfeed or breastfeeding

Table 3: Feeding variables reported by mothers attending a chiropractic clinic

Variables	Number (n)	Yes n(%)	No n(%)
Problems with feeding	n = 1740	623 (35.8)	1117 (64.2)
Did baby latch within 1st hour	n = 317	194 (61.2)	124 (38.8)
Does baby latch well now	n = 278	158 (56.8)	119 (42.8)
Is feeding a pleasure	n = 547	397 (72.6)	150 (27.4)
Does baby bite the nipple	n = 301	153 (50.8)	148 (49.2)
Does baby gag while feeding	n = 323	137 (42.4)	185 (57.3)
Is baby irritable while feeding	n = 335	215 (64.2)	120 (35.8)
Does baby regurgitate during/after feeding	n = 565	387 (68.5)	177 (31.3)
Is there ever projectile vomiting	n = 232	81 (34.9)	151 (65.1)
Is baby in discomfort while feeding	n = 327	154 (47.1)	173 (52.9)
Does baby dribble milk while feeding	n = 336	222 (66.1)	114 (33.9)
Does baby make noises while feeding	n = 338	247 (73.1)	91 (26.9)

Table 4: Maternal report of feeding parameters of their infant

Parameters	Number (n)		Frequency	Percentage
In what position do you feed your baby	n = 283	cradle position	n = 97	34.3
		front/upright	n = 39	13.8
		rugby ball	n = 52	18.4
		lying down w/mother	n = 12	4.2
		all positions	n = 83	29.3
Average feeding time	n = 326	< 10 minutes	n = 62	19
		20 minutes	n = 89	27.3
		20-45 minutes	n = 97	29.8
		> 45 minutes	n = 19	5.8
		variable	n = 59	18.1
If formula changed, how many times	n = 69	1	n = 42	60.9
		2	n = 16	23.2
		3	n = 9	13
		4	n = 2	2.9
How is the baby fed	n = 1494	breast fed	n = 8	9.5
		formula	n = 495	33.1
		both breast and formula	n = 235	15.7
What would stop you from breastfeeding	n = 84	work	n = 8	9.5
		pain	n = 38	45.2
		not enough milk	n = 19	22.6
		other	n = 19	22.6

Table 5. Maternal report of specific feeding issues with their infant

	Number (n)	Yes (n%)	No (n%)
Does the baby need to be woken to feed	n = 337	84 (24.9)	253 (75.1)
Did you plan to BF while pregnant	n = 587	541 (92.2)	46 (7.8)
If formula, has the formula changed	n = 189	71 (37.6)	118 (62.4)
Did baby have tongue tie	n = 344	104 (30.2)	240 (69.8)
Do you use nipple guards	n = 263	39 (14.8)	224 (85.2)
Does baby use a dummy	n = 192	103 (53.6)	89 (46,4)
Feed equally from both sides	n = 225	154 (68.4)	71 (31.6)
Does feeding hurt you	n = 238	111 (46.6)	127 (53,4)
Do you give baby water	n = 333	89 (26.7)	244 (73.3)

BF = breastfed, breastfeed or breastfeeding

Discussion

This study sought to collect and report multiple parameters of infant feeding practices in an outpatient chiropractic clinic with a large intake of infant patients. The most common age at presentation was four weeks of age and just over half were breastfed. This compared favorably to UK statistics where there is a profound drop in breastfeeding by six weeks of age to 23%.[3] This is likely because of two factors; this is a conservative practice where many mothers present with feeding problems (24%) in the endeavor to seek improvement. Mothers who attend this clinic often seek chiropractic care as a "last resort" and come for help prior to cessation of breastfeeding. We may have seen the tip of the iceberg….many mothers may still be breastfeeding, but on their last gasp. More than a third (36%) admitted to feeding problems even though that wasn't their prime reason for attendance at the clinic. The most striking finding among those who did not breastfeed was the early stoppage of breastfeeding, on average at three weeks of age in this population.

Our cessation findings were corroborated in the research literature in that the largest decrease in breastfeeding rates occurs during the first four postpartum weeks and reasons for early breastfeeding discontinuation are complicated.[6] Mothers who discontinue breastfeeding early are more likely to report a lack of confidence in their ability to breastfeed, problems with the infants suckling or latching, perception of insufficient milk supply, breast soreness or pain or a lack of individualized encouragement from their clinicians in the early post discharge period.[6] In our study, those who stopped recorded general dissatisfaction with the feeding experience or pain.

However, most of the women did plan to breastfeed for six months or more, while they were pregnant. Their pre-delivery intentions about breastfeeding were strong predictors of both initiating this behavior and continuing it through the vulnerable post-delivery period. As a matter of fact, this study shows that they were likely to breastfeed for twice as long if they planned to breastfeed while being pregnant. This same phenomenon was found in previous research.[6] Ahluwalia, Marrow and Hsia in 2005 concluded that adequate interventions during pregnancy and soon after delivery will assist women in making the optimal infant-feeding choices for themselves and their infants.[7] Another study by Labarere et.al. in 2005, provided preliminary evidence of the efficiency of breastfeeding support through early, routine, preventive visits to the office of trained primary care physicians.[8] This points to the fact that chiropractors who help babies breastfeed through their mechanical treatment may keep the dyad feeding when they may otherwise have failed.[5]

In this study, 24% of the presenting complaints were feeding problems. Yet when asked directly if they had problems with feeding, nearly 36 percent more of the sample answered yes. This may suggest that even if a mother presents to a clinic with a completely different complaint than feeding difficulties, such a problem may still co-exist. She may feel that the problems are common and she cannot complain about it. For this reason alone, one can see the importance of identifying factors that may influence early feeding experience. Clinicians need to ask the correct questions about feeding in order to find out how common this problem really is and from there, encourage breastfeeding.

Almost half of the women who responded claimed that pain would possibly stop them from breastfeeding. This leads to a concern regarding maternal pain that might be associated with breastfeeding in an infant with suboptimal feeding technique for biomechanical reasons.[5] It is recognized that in the early stages of breastfeeding, even normal infants may cause their mothers to experience some nipple pain.[6] However, if the infant is struggling to breastfeed due to a dysfunctional suck, this needs to be addressed early.[5] According to Maxwell and Fraval in 1998, this type of maternal nipple pain resulting from an infant's dysfunctional sucking can be severe.[9] Further, they describe how this can lead to exquisitely tender, cracked and/or bleeding nipples of the breast-feeding mother and that it can alter the milk composition or secretion.[9]

Over half of the respondents who stopped breastfeeding also had assisted births. There was, however, no statistically significant correlation between type of birth and feeding. We wondered whether the weak correlations could be because of the skewed sample of healthy, mostly full term neonates, and, in this clinic, many of whom are routinely referred early by other health care professionals.[10] Thus, there was little variation in the sample. Despite these findings, it is appropriate to apply the concept that birth practices affect breastfeeding, because the establishment of a satisfactory suckling pattern, may not be achieved as easily for an infant who has a mechanical deficit from a birth trauma.[11]

The possibility that intrapartum analgesia affects breastfeeding has been investigated before. However, the literature contains contradictory reports of the impact of neuroaxial opioids on lactation and neonatal behavior. While inhalation analgesia is rapidly eliminated from mother and neonate, other analgesics cross the placenta and enter colostrum.[12] Therefore, intrapartum analgesics may exert effects on both mother and infant affecting early cessation.

In this population, the mothers who stopped breastfeeding did so early on average around 3 weeks, despite all the

evidence regarding the significant health advantages to the mother and growing child. This suggests that an unsatisfying feeding experience, if not ameliorated, may lead to difficulties initiating and sustaining breastfeeding. It is therefore important to identify factors that influence early feeding experiences for the newborn and the mother. It is unlikely that these were uneducated mothers who didn't know the advantages of breastfeeding, but still they could not sustain it. It is hugely important that we understand why and manage these problems.

Conclusion

Breastfeeding has a major role to play in public health. Predominance of assisted births compared to natural births, along with a lack of satisfaction with the feeding experience were associated with cessation in this sample and thus it is representational of the general population where the same has been found.[3] Of particular influence was the important role that breastfeeding intentions played in determining women's actual decisions. Amongst the women who stopped, they breastfed for twice as long if they had planned to do so during pregnancy. However, they fell far short of public health guidelines.

Further study is required to determine which factors, including chiropractic care, might support new mothers to continue to breastfeed.

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Resolution of recurrent acute otitis media in a child undergoing chiropractic care: a case report

By Karine Dunn-Sigouin, DC[1]

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ABSTRACT

Objective: Discuss the chiropractic management of a pediatric patient suffering from recurrent acute otitis media. **Clinical features:** 23-month-old female presenting with 6 acute otitis media episodes since the age of 6 months. Parents are alerted to otitis media symptoms when the child pulls on the ear and cries. Current allopathic treatment consists of antibiotic therapy but episodes of otitis media are still recurrent. **Intervention and outcomes:** The patient received 6 full spine diversified chiropractic adjustments with myofascial release of cervical muscles and effleurage of the frontal and maxillary sinuses over the course of one month. Treatment protocol was then changed to 1 visit per 2 weeks, 1 visit per month and lastly, prevention visits at 1 visit per 2 months or whenever the patient presented with cold symptoms. During the year following the first chiropractic treatment, the patient continued chiropractic care every two months and has had no reoccurrence of AOM. **Conclusion:** This case suggests that chiropractic care may be a natural, effective and low risk approach to treating recurrent acute otitis media in the pediatric patient.

Key words: otitis media, treatment, chiropractic, pediatric, manipulation.

Introduction

Otitis media (OM) is a common condition among the pediatric population. It accounts for approximately 40% of antibiotic prescriptions[1] in children under age 5 and represents the number one reason for pediatric medical visits[2]. The peak incidence of OM is situated between 6 and 24 months with two thirds of children receiving the diagnosis by age 2. Of those diagnosed, a third will have had 3 or more episodes[3]. Risk factors for OM include young age, daycare attendance, male gender, exposure to second-hand smoke, upper respiratory tract infection, repeated antibiotic therapy and short duration of breastfeeding.

OM can be subdivided into acute otitis media (AOM), otitis media with effusion (OME) and middle-ear effusion (MEE)[4]. By definition AOM is a bacterial and/or viral infection of the middle ear with a rapid onset of signs such as a cloudy, hemorrhagic or strongly red tympanic membrane (TM), bulging TM and/or a TM with impaired mobility. Possible symptoms of AOM include fever, excessive crying, otalgia and modified sleep or behavior among others. Recurrent AOM is defined by 3 or more well documented and separate AOM episodes in the preceding 6 months or 4 or more episodes in the preceding 12 months with at least 1 episode in the past 6 months.

The gold standard treatment for AOM in children under 24 months is antibiotic therapy with severe symptoms or bilateral AOM and observation or antibiotic therapy with mild symptoms and unilateral AOM. However, an estimated 30% of AOM are of viral origin making antibiotics useless[5]. Antibiotic-resistant infections[6] and overuse of antibiotics are becoming an increasing concern causing parents to seek out alternative treatment in the form of complementary and alternative medicine (CAM). Chiropractic is the most commonly sought out pediatric CAM[7] but it is not currently recognized as a potential treatment for OM because of limited evidence in literature[8].

In the present study, the case history, chiropractic management and clinical outcomes of a 23 month-old girl with recurrent AOM are reported.

Methods

Relevant studies were found using the following electronic databases: PubMed, Mantis, Index to Chiropractic Literature and Google Scholar. Databases were searched from inception through July 2015 using the keywords: otitis media, pediatric, chiropractic, manipulation and treatment. Publications utilized included systematic reviews, randomized controlled trials and case studies. Other books and articles were used to provide supporting information.

Case report

A 23 month-old Caucasian female, accompanied by her mother, had a history of recurrent OM. The first episode of AOM began when the patient was almost 6 months old. Every episode, including the first, was brought to the parents' attention by the child pulling on her ear and crying in pain. However, no episode was accompanied by fever. The mother reported an ear leaking at least once but could not specify on which side. The episodes were not limited to one side but varied. Current parent intervention was to bring the child to her pediatrician or to a walk-in clinic

where she was diagnosed with AOM and prescribed a 10-day antibiotic therapy each time. History of antibiotic treatment is noted in Table 1. Health history revealed a rapid uncomplicated vaginal birth with epidural, up-to-date vaccinations, age appropriate motor and social development and no breastfeeding.

Table 1. Summary of medical treatments for AOM

Date	Age of Patient	Diagnosis*	Medical treatment†
2012/11/29	6 months	AOM	Amoxicillin (10 days)
2013/03/20	9 ½ months	AOM	Amoxicillin (10 days)
2013/07/13	13 months	AOM	Amoxicillin (10 days)
2013/11/23	17 ½ months	AOM	Amoxicillin (10 days)
2014/03/06	21 months	AOM	Biaxin (10 days)
2014/05/01	23 months	AOM	Amoxicillin (10 days)

**Side of AOM could not be obtained because the patients' medical file was never received.*
†Treatment information was obtained from the patients pharmacy file.

Physical examination revealed an unremarkable posture and normal range of motion for the thoracic and lumbar spine. However, cervical range of motion was restricted in right lateral flexion. Deep tendon reflexes were normal and the plantar reflex was absent. The orthopedic evaluation of both hips was unremarkable. The eye exam was also unremarkable. Otoscopic evaluation without insufflation showed a non-bulging erythematous right TM and a normal left TM. Static and motion palpation of the spine revealed restricted joint motion of C1 on the right. General palpation revealed hypertonic right suboccipital (SO) muscles and sternocleidomastoid (SCM) muscle.

A diagnosis of multiple vertebral subluxation complexes associated with recurrent bilateral otalgia was made. Treatment was initiated at the second visit. The patient was adjusted full spine using high velocity low amplitude manipulation (diversified technique) for C1, T6 and the right sacroiliac joint. The bilateral suboccipital muscles and sternocleidomastoid muscles were treated using myofascial release and frontal and maxillary sinuses with gentle effleurage. The patient was started on probiotics and the parents were advised to do nasal irrigation at least 4-6 times a day when cold symptoms were present and twice a day when they were not. The patient underwent 2 weeks of bi-weekly visits and 2 weeks at 1 visit/week for the first month. Treatment protocol was then changed to 1 visit per 2 weeks, 1 visit per month and lastly, preventive visits at 1 visit per 2 months or whenever the patient presented with cold symptoms. Treatment outcomes and results are noted in Table 2. The parents of the patient reported no adverse reaction to any of the treatments given.

Table 2. Summary of chiropractic treatments

Date	Patient Symptoms	Level Adjusted	Myofascial Therapy	Sinus Effleurage	Aspect of TM ‡ Left	Right
2014/05/05	Diarrhea	C1, T6 Right S1 joint	Bilateral SO and SCM	Normal	Normal	Non-bulging & slight erythema
2014/05/07	Nasal congestion	C1, T6	Idem	Idem	Normal	Non-bulging & slight erythema
2014/05/12	None	C1, T6	Idem	Idem	Normal	Normal
2014/05/14	Improved sleep	C1, T6, right SI joint	Idem	Idem	Normal	Normal
2014/05/21	Cranky	C1, T6, right SI joint	Idem	Idem	Normal	Non-bulging & slight erythema
2014/05/28	None	C1, T6, L5	Idem	Idem	Normal	Non-bulging, pink with fluid level & air bubbles
2014/06/02	None	C1, T6	Idem	Idem	Normal	Normal
2014/06/18	None	C1, T6, right SI joint	Idem	Idem	Normal	Normal
2014/07/16	Nasal congestion, end of a cold	C2, T6, right SI joint	Idem	Idem	Normal	Normal
2014/09/10	Cold 2 weeks before	C2, T6, left SI joint	Idem	Idem	Normal	Normal

‡Normal TM : non-bulging, pink appearance with no fluid level or apparent air bubbles.
§Erector lumbar muscles.

During the year following the first chiropractic treatment, the patient continued chiropractic care every two months and had no reoccurrence of AOM. To this day, the parents are satisfied with the treatment outcomes and the patient comes in for wellness care every two months or whenever cold symptoms are present.

Discussion

AOM is due to a viral or bacterial infection of the middle ear causing a painful buildup of infected fluid behind the TM. Other than the risk factors previously mentioned, children are anatomically predisposed to OM because of the small caliber of their eustachian tube (ET), its horizontal orientation, its short length and the lesser tensor veli palatine muscle (TVP) surface area[9]. Thus, the anatomy makes fluid drainage less evident and protection of the middle ear from infection more difficult. There are three hypotheses in literature about the relationship between vertebral subluxation and OM.

Proper functioning of the ET depends on the normal function of the TVP. The TVP is the primary active opener of the ET. Other possible muscles such as the levator veli palatine, medial pterygoid and lateral pterygoid muscles may play a role in the ventilation mechanism of the ET[10] but further research is needed. The TVP receives its innervation from the mandibular branch of the trigeminal nerve which in turn receives its innervation from the nucleus of the spinal trigeminal tract. Korn and Stone-McCoy[3] state "The trigeminal nerve fibers unite with portions of the superior cervical ganglion located between C1 and C4 nerve roots with the nucleus of the spinal trigeminal tract extending into the upper cervical region.'' Therefore, altered movement of the upper cervical vertebrae and the occiput could influence TVP function consequently leading to disturbed ET function and recurring AOM.

Another hypothesis involves the relationship between the lymphatic drainage of the head and neck and muscle hypertonicity[11]. Restricted movement of the cervical spine may cause muscle hypertonicity. Lymphatic drainage is helped by 'muscular contractions, arterial pulsations, and external compression of body tissues.'[12] This suggests that hypertonic muscles may cause lymph congestion in the cranio-cervical region. Hence, cervical spinal manipulation and myofascial release may help improve lymphatic drainage by decreasing muscle tension[13].

Lastly, there is increasing evidence that the nervous system may influence the immune system because receptors for neuromodulators have been found in lymphoid tissues. The theory is that altered movement in the spine could affect immune response[14]. In fact, Brennan et al demonstrated a significant increase in polymorphonuclear neutrophils after a thoracic adjustment was given to the subluxated area[15]. According to research, cervical adjustments illicit a parasympathetic response[16]. Furthermore, the parasympathic nervous system seems to regulate peripheral anti-inflammatory responses by activating a cholingergic pathway that attenuates pro-inflammatory cytokine and stimulates anti-inflammatory cytokine release[17]. Hence, it could be theorized that a cervical adjustment engages peripheral nervous system by stimulating a parasympathetic response. The parasympathetic response could then reduce the inflammatory response linked to OM and boost immune function making duration of OM shorter and recurrences less likely.

In the present case, the presence of vertebral subluxation at C1 and C2 may have caused impaired function of the TVP thus altering proper drainage of the ET. Upper cervical subluxation may have increased muscle hypertonicity in the SO and SCM muscles also leading to impaired lymphatic drainage of the cranio-cervical region. There could also have been an imbalance in the sympathetic and parasympathetic activity leading to impaired immune function and an increase in pro-inflammatory cytokines. By restoring normal joint motion in the upper cervical spine, ET function, immune function, anti-inflammatory reactions and lymphatic drainage may have been improved leading to better resistance against infection and better protection of the middle ear against lymphatic congestion. Myofascial release[18] of the SO and SCM and gentle effleurage of the frontal and maxillary sinuses may have promoted better lymphatic drainage. Probiotics[19, 20] may have temporarily helped immune function and nasal irrigation may have supported mucus evacuation.

Conclusion

The purpose of this study was to present the chiropractic management of a patient with recurrent otitis media. The patient is still under chiropractic care and has had no other episode of medically diagnosed AOM. Considering the favorable outcome and the absence of adverse effects, this case report suggests that chiropractic treatment may be a natural, effective and low risk approach to managing recurrent acute otitis media in the pediatric patient. However, more research is needed to improve knowledge on the effect of chiropractic adjustments on the autonomic nervous system and to determine what subsets of patients could benefit from chiropractic care for different types of otitis media.

Consent

Written informed consent was obtained from the patients' parents for publication of this case report.

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Developmental advancements following chiropractic care in a four-year-old child with dyspraxia and associated developmental delays: A case report

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ABSTRACT

Objective: To present the chiropractic management of a 4-year-old child diagnosed with dyspraxia and concomitant vertebral subluxations. **Clinical Features:** A four-year-old boy with a history of developmental motor delays was presented by his mother for chiropractic evaluation. The child was previously diagnosed with dyspraxia at one year of age, based on a delay in developmental milestones being met; specifically of speech and fine motor control. The patient was 1.25-years-old before starting to walk and 3-years-old before being able to produce any basic sounds such as "Ma" or "Da". At the commencement of chiropractic care the child was undergoing concomitant speech therapy; six weeks of intensive repetitive therapy was the average amount of time required for the patient to learn and retain one new sound or word. **Intervention:** Modified Diversifed (Touch-and-hold) and Sacro-Occipital Techniques were utilized to reduce subluxation indicators through the cranium, upper cervical and lumbopelvic spine. Fifteen adjustments were administered over a 4-month period. **Outcome:** The child experienced a number of developmental advancements over the duration of chiropractic care, specifically in speech, fine motor control and coordination. After 8 visits the patient learned 20 new words in one week, after 12 visits all primitive reflexes were tested to be within normal limits and after 15 visits their vocabulary consisted of hundreds of words and continued to expand. **Conclusion:** This patient experienced significant developmental advancements while receiving chiropractic care. Additional research is necessary to assess the role chiropractors may play in caring for children with developmental delays.

Key words: Dyspraxia, developmental delays, chiropractic, pediatric, vertebral subluxation.

Introduction

Developmental delay is used to describe a child who does not reach the predicted developmental milestones at the expected times; delay can occur in one or many areas, including gross or fine motor control, speech and language development, cognitive/intellectual development and social and emotional development.[1] Children with developmental delays often have retained primitive reflexes. It has been documented that when a cluster of primitive reflexes remain they are counterproductive to normal neural maturation, contributing to developmental delays.[2]

Developmental dyspraxia, developmental delay syndrome, developmental coordination disorder or perceptuomotor dysfunction is a neurologically based disorder of unknown etiology that affects motor skill development.[3] Individuals with dyspraxia experience difficulty planning and executing tasks that require fine motor skills, affecting any or all areas of development including physical, intellectual, emotional, social, language and sensory. Each individual with dyspraxia is affected in a different way, at different stages of development and with differing severity. It is estimated that up to 10% of individuals in New Zealand are affected by some degree of dyspraxia with approximately 2% of those individuals being severely affected and 70% of all those affected being male.[3, 4]

Common treatment interventions for children with dyspraxia include occupational, speech, physical and sensory integration therapy in order to help the child improve fine and gross motor skills as well as develop the ability to plan and execute a process and increase activity and participation with others. [3, 4, 5]

Chiropractic Care for developmental delay syndromes, while controversial to some, has growing support in the research literature.[6] At this time there is no conclusive information on the causation of developmental delay syndromes, however current evidence supports the premise that some may be secondary to trauma and related to the sensory-motor impairment syndrome known as dyspraxia[2]. While the studies are inconclusive, there is emerging evidence that does show chiropractic care may be successfully employed in the treatment of patients with developmental

delay syndromes such as dyslexia, dyspraxia, learning disabilities, and ADHD.[2, 6] The purpose of this case study is to add to this body of literature by reporting upon the developmental advancements and the restoration of appropriate sensorimotor function in a 4-year-old boy with dyspraxia who was receiving chiropractic care.

Method
An online literature search was conducted using scientific journal databases; Google Scholar, Index to Chiropractic literature, PubMed, ChiroACCESS, Mantis, and Elsevier. Search key words and phrases included "developmental+delay", "developmental+delay+toddlers", "developmental+delay +dyspraxia", "developmental+delay+primitive+reflexes", "developmental+delay+chiropractic", "developmental+delay+manual+therapies", "sensory+integration+disorder", "dyspraxia+pediatric+chiropractic", "dyspraxia+primitive reflexes", "sensory+integration+disorder+chiropractic", "dyspraxia+manual+therapies", "primitive+reflexes+integration+exercises", "dyspraxia+neurology+chiropractic", "dyspraxia+pediatric+exercises."

No searches that included chiropractic as a key word returned articles or studies similar to this case. However, there were a number of resources that provided adequate insight into pediatric neurology to deduce a hypothesis.[2] Other articles and resources were also used to provide background information.

Clinical Presentation
A 4-year-old child was presented by his mother for chiropractic evaluation in May of 2013 with a primary concern of developmental delays. His parents first noticed these delays when the child was 1-year-old; upon medical assessment, he was diagnosed with dyspraxia. The parents noticed that there were differences in the child's movements compared to older siblings as well as significant delays in meeting developmental milestones. The patient seemed to avoid rolling over or crawling, was sensitive to the touch of different textures and moved his whole head as opposed to performing isolated movements of his eyes. The process of walking was delayed and not attempted until the patient was 1.25-years-old. As development continued there was no display of hand dominance and the patient did not start producing any sounds or the beginnings of words until 3-years old.

The child worked continually with a speech therapist from a young age. As he was unable to produce words easily, the goal of each block of speech therapy was to teach him how to formulate one new sound so that eventually the necessary sounds could be combined in order to create a full word. To learn an individual sound, a block of therapy with an approximate duration of 6-weeks was required. His history also included 2 visits to a cranio-sacral osteopath after falling off the back of a utility vehicle at 2 years of age with no notable residual problems or concerns.

Examination
The child was engaged and alert during the initial examination process however due to frustration as a result of communication difficulties he was somewhat non-compliant and had trouble following directions. The chiropractic physical examination revealed abnormalities in the following primitive reflexes: Positive bilateral asymmetrical tonic neck reflex, positive Fukuda Stepping test, positive tonic labyrinthine reflex and positive Moro reflex. A spinal examination was performed and objective indicators of vertebral subluxation at C2 and sacrum were identified through static and motion palpation. High dural tension through the cranial sutures was also noted.

Intervention
The child was checked by the chiropractor twice a week for the initial three weeks of care, followed by one visit per week for six weeks before reducing the visits to fortnightly. Adjustments were performed at every visit. Techniques utilized included modified Diversified (touch and hold) for C2 and sacrum as well as Sacro-Occipital Technic to address dural tension and enhance craniospinal meningeal dynamics through increased cranial suture mobility. These adjustments included occipital molding, dural balance, sutural and sphenobasilar release and adjustments to improve cerebrospinal fluid flow.

During the first phase of care, "walking on the ceiling" and "superman" exercises were prescribed to be performed at home daily. "Walking on the ceiling" involves a cross crawling action that is performed with the child laying supine and raising a straight leg with the opposite arm. The "superman" exercise is performed prone with arms by their side and requires the child to lift their chest and head off the floor by engaging the posterior spinal muscles only. A new exercise - "the snow angel" - was added late in the second phase of care

Outcome
Over the course of the first six visits there was a vast improvement in the patient's ability to produce sounds, as well as his ability to perform cross-over exercises. During the second phase of care, on the eight visit the patient had learned how to say twenty new words in the space of a week and also spoke his very first full sentence; "I love you, mum." The patients vocabulary continued to expand at a rapid rate and by the 12th visit all primitive reflexes had integrated and there were vast improvements in fine and gross motor control. In the third phase of care, by the 15th visit, his expressive vocabulary had expanded to include

hundreds of new words and it continued to grow; he was also able to start school. No adverse events were observed, nor reported as a result of chiropractic care.

Discussion

Development advancements in a four-year-old child with dyspraxia and associated developmental delays were observed and documented over a 5-month period of chiropractic care. Care was warranted based on the child's failure to meet important developmental milestones at the appropriate time. A infant's brain matures from most basic to most complex, so the automatic, unconscious, regions of the brain are the first to function.[2] The brain of a fetus and newborn infant is wired in a way to promote initial survival at a reflex level, a reflex being an unconscious predictable response to a specific stimulus. The stimulus, involving a simple sensorimotor pathway, does not interact with the higher conscious brain and the reaction is always the same.[7] Sometimes the changes in wiring of a child's brain from primal to more conscious does not proceed as it should, therefore the various specialised centres do not develop as well or as fast as they should and consequently cannot function appropriately; the result is developmental delay.[7]

Conventional treatment methods for developmental delays include and are not limited to sensory integration therapy, speech and language therapy, physical therapy, behaviour therapy and medication.[3]

Although causes of dyspraxia may involve multiple systems[8], in this case the symptoms of dyspraxia appeared to be reduced when the patient's upper cervical and cranial subulxations were corrected. It is important also to note that this case included efforts made by the parents to successfully complete the prescribed at home exercises. Although it is unclear exactly how specific movements aid in the integration of primitive reflexes, it has been speculated that utilizing these exercises increases the sensory stimulation and feedback to the nervous system, which in turn stimulates the genes responsible for synaptogenesis and neuroplasticity of the more complex areas of the brain. This ultimately results in enhanced long-range connections between the right and left hemispheres of the brain and in turn, increased synchronization and connectivity of large cortical networks.[2] The second phase of care involved increasing the difficulty of these exercises in order to further improve fine motor control.

The primary areas adjusted in the child were the cranial system, C2 and sacrum. A proposed hypothesis for the improvements noted in the child over the course of care is as follows: through enhancing craniosacral motion, reducing tension at the falx cerbri and tentorum cerebelli and reducing dural torsion, normal neurological transmission was promoted, thus optimizing neurological function by promoting neuroplasticity through normalized sensory input. This leads to appropriate somatosensory filtering and processing as well as improved sensorimotor integration, ultimately resulting in accurate perception and motor planning, (normalized neurologic function).[9,10] It is possible that through this restoration of accurate sensorimotor integration and increased processing speed, the child's brain was able to more efficiently process and integrate stimulation from the prescribed exercises. This could ultimately result in normalized brain maturation through enhanced cortical connectivity and synchronization.[2]

A limitation of this, and all, case studies is that the conclusions are based on the outcomes of one individual; arguably the innate ability of neurological maturation and development due to natural progression may have ensued without the intervention of the adjustments. Due to the retrospective nature of the case study, subjective notes were not documented in fine detail on each visit, therefore incremental improvements were unobtainable and other details may have been overlooked. Performing additional case studies of similar patient symptoms, dyspraxia and associated developmental delays, may further illuminate the outcomes.

Conclusion

This case study reports a possible association between chiropractic care and improvements in delayed development in a four-year-old child. Additional research is necessary to further understand the role chiropractors may play in caring for children with developmental delays.

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Patient-centered health care for infants: a qualitative analysis of mothers' experiences and preferences

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ABSTRACT

Objective: Nowhere is patient-centered care more important than in the vulnerable time of the first few weeks of a new-born's life. However little is understood about mothers' experiences and preferences with health care. **Method:** Thirty-four mothers were interviewed using verbatim transcripts to code for key and recurrent themes regarding their experiences and preferences in health care for their infant. **Results:** Mothers valued honest and realistic reassurance, time with a health care professional who really listens and continuity of advice rather than inconsistent or conflicting advice. Mothers are often sent for chiropractic care on the recommendation of other health care professionals who recognize a biomechanical problem from birth trauma. **Conclusion:** Patient-centered care begins with understanding the patient, or in the case of infants, the parents' needs for that patient. Clinicians who give time, attention, reassurance and consistent advice are valued by mothers who seek care for their infant.

Key words: infant health care, qualitative, maternal perceptions.

Introduction

The US National Center for Health Statistics found that the most commonly used provider-based Complementary and Allied (CAM) therapy for children was manipulation, provided by chiropractors or osteopaths.[1] Infants comprise a large percentage of the pediatric population seeking chiropractic care.[2, 3] Although there are published guidelines upon which to base the management of these patients,[4] the aims of the actual users of this service, the parents, have been little investigated. This is despite the general move toward more involvement of the service users within clinical settings.[5] Most studies that have asked parents what they want from health care for their child have been quantitative and based on needs, satisfaction and specific services provided.[6] A largely lacking strategy in the improvement of infant care has been the use of maternal perspectives on the health care received. Maternal experiences and expectations of health care for her infant are key to assisting health care providers to improve the usefulness and relevance of the care they give. The purpose of this study was to use qualitative methods to collect in-depth information from mothers about why they present their infant for chiropractic care along with their pre-existing experiences and expectations of health care.

Background

Qualitative methods are now widely used in health care research. This design involves open-ended, individual or group interviews with members of the target population in order to ensure that topics accurately reflect the perspective of that specific population.[7] A natural strength of qualitative methodologies is the production of results that have strong credibility and face validity (measuring what is intended to measure)[8] and in our case, bears the relative importance placed on the topic by the mothers.

Qualitative research is carried out in order to help the patient, but just as importantly, to help the clinician understand the patient. An important goal of qualitative research is to uncover patient needs and shape the opinion of decision-makers whose actions primarily affect patient's health and wellbeing.[8] Healthcare services have managed recently to gain a considerably deeper understanding of patient experience,[9] and this could be due to health researchers increased use of focus groups in their studies.[10] The rise in qualitative research and use of focus groups has been apparent since 1985 onwards with over a thousand studies published between 1985 and 1999, and a continuing sharp increase from this point onwards.[10] Colson et al. (2013)[11] report that of 4057 abstracts being submitted to the Paediatric Academic Societies in 2010, 1.6% used only qualitative methods. However, these abstracts were three times less likely to be chosen for platform presentations, but demonstrated greater odds of getting published. Those researchers suggested that their results may be due to inferior quality or inadequate review process of qualitative studies. Qualitative studies may not be undertaken because they are not always valued for their own sake and further,

there are inherent problems in doing them, particularly with children.

Infant sleeping, crying and feeding are consistently top concerns for mothers when it comes to research carried out in the paediatric setting. These issues are most commonly discussed relative to any change after any given intervention. The goal of our study was to find out what mothers want and expect from care, prior to any intervention taking place. There is very little research in this area. The qualitative research in the health care field with children is limited not merely because of the sample population but also due to ethical considerations.[12]

A qualitative study conducted by Radecki et al. 2009[13] is one of the few which touch the base we aimed to cover, as their goal was to find out what parents want from well-child care. Their study was conducted using 20 focus groups (N=131 — with parents of children aged 0-2, 3-5 and 6-12 years) with the emphasis on finding out parental experience and expectations about well-child care, which was then used to better the understanding of clinicians. This sample size was unusually large for a qualitative study which might have been affected by the financial incentive offered to the participants ($25).

Other relevant qualitative studies have used individual interviews, rather than focus groups. Lindberg and Engström (2013)[14] used semi-structured interviews (N=8), followed by thematic content analysis to gain understanding about fathers' experiences and of care in relation to complicated childbirth. Following on, Lundqvist et al. (2014)[15] completed a qualitative longitudinal study into father's lived experience after the birth of their very preterm child, again using interviews (N=13). It is interesting that both of these studies investigating fathers' perceptions were done in Sweden which has been regarded one of the most gender equalized countries of the world, where of the 480 days parental leave 60 days were reserved for the father.

In contrast, this study was based solely on the mother's experience of healthcare because a mother in most countries is still seen as the primary guardian of the child.

Methods

The objectives of this qualitative study were to investigate:
1. What mothers want from health care
2. Perceptions of the previous care they have received

This study was part of a larger study to develop a validated paediatric outcomes questionnaire based upon what mothers want from health care for their infant. Our study methodology was built closely around the work done by Richard Krueger in the early 1990's[16] whose work has then been used and modified by many others.[17]

Setting

The interviews took place at a chiropractic teaching clinic on the south coast of England. The setting was chosen because of a large number of infants presenting weekly. Ethical approval was granted by the AECC Research Ethics Subcommittee prior to beginning of interviews.

Subjects

The selection criteria for the interviews was based on a convenience sample of mothers who presented with an infant to the clinic, and were willing to take part in an interview or focus group after their clinical encounter had come to an end. Those subjects who consented were offered a choice between an individual interview immediately after their treatment on that day, or a focus group at a later time. Mothers could decline to participate or withdraw at any time during the interview process. All mothers were given an information sheet describing the study and signed an informed consent form, which included permission to record the conversation.

Procedures

Interview questions are seen in Table 1. The goal of the interview was to provide a place and space for the mother to express her experiences and views in entirety, whether favourable or not, in the presence of an empathic and non-judgmental listener. The interviews began with a statement explaining that the facilitator was interested in finding out what mothers want from care when they seek health care for their children. Participants were asked a set of questions to guide the conversation but the mothers were encouraged to talk freely about their experiences.

Table 1. Interview Questions

- Introduction of mother and baby
- What is the presenting complaint?
- What care have you received — here and elsewhere?
- Is resolution of the problem and explanation of the problem more important, or is it something else?
- What impact is the problem having on the mother and the rest of the family?
- What outcomes of healthcare are important?
- How much change is desired for this problem?
- How is this change measured by the mother?
- Time spent with a healthcare provider: is it useful? Is it long enough?
- What value would a follow up appointment after discharge have?
- Conflicting advice
- Is reassurance important when you see a health care provider with your baby?

Interviews were planned to last up to 30 minutes, to use as little of mothers' time as possible, but cover the topics. All interviews and one focus group were recorded anonymously and data were later transcribed verbatim.

The methodological approaches that were used in the qualitative analysis were based around content analysis as described by Hsieh and Shannon (2005).[18] Qualitative content analysis is defined as a research method where subjective interpretation of the text is processed by coding text into categories and themes.[18] Based on the transcripts, categories were created and through constant comparison of texts, these categories were grouped under overarching themes.

Coding was completed according to the methods described by Erlingsson and Brysiewicz.[19] Category means grouping was imposed on the coded segments, in order to reduce the number of different pieces of data in the analysis, and answer the question "what?".[19] A theme was identified as a higher-level of categorization, usually used to identify a major element of the entire content analysis. Themes answer the question "why?" and can be considered as the thread of underlying meaning that ties the data together.[19]

When new items or themes ceased to arise, saturation had been reached and patient interviews were discontinued. This is supported by Krueger's (1994) research, which suggested running focus groups until a clear pattern emerges and subsequent groups produce only repetitive information (theoretical saturation).[16] Brod et al. (2009)[20] commented on the previous research and suggested that after 12 interviews, between 88% and 92% of analysis codes (themes) could be identified.

Results

A total of 31 mothers agreed to participate in interviews and three mothers took part in the focus group (N=34). No mother refused to answer any of the questions. The characteristics of mothers and babies are seen in Table 2. Mothers presented their infant to the clinic for different reasons, and these reasons are summarised in Table 3.

Table 2. Demographic profile of mothers and babies in clinic

- Number of previous healthcare professionals seen for the problem: mean: 7.2 (range: 2-17)
- Age of infants: 7-172 days, 16 less than one month or less; 18 more than one month
- 26/34 mothers were primiparous
- 9/34 reported multiple interventions during birth
- 19 female babies, 14 male
- 19 exclusively breastfed, 5 combination breast and formula milk, 2 exclusively formula fed

Table 3. Infant problem at presentation to clinic

- 19/34 babies had feeding problems
- 8/34 babies came into the clinic for a check-up
- 6/34 babies presented because of a head preference
- 5/34 babies had sleeping problems
- 2 babies had crying problems
- 1 baby was unable to lie supine
- 1 baby had a positional head deformation
- 1 baby had musculoskeletal problems
- 1 baby had a sternocleidomastoid tumour
- 1 baby had cephalohaematoma

Major themes that came up in the interviews time after time were identified: reassurance, impact on family life, conflicting advice, birth related difficulties/concerns or reasons for seeking chiropractic care and maternal preferences for care. Each theme was supported by quotes from the transcripts.

Reassurance

Reassurance was a key aspect of care that received the highest number of comments. Reassurance is part of therapeutic alliance which refers to the relationship between a healthcare professional and a patient, where engaging with each other will affect potential change in the patient. Mothers were keen to discuss the importance of reassurance to them, whether this were their first baby or subsequent baby; mothers find it easy to worry, even about small things. This tendency, accompanied by lack of sleep and the stress of a new baby, made the need for reassurance a key aspect of care.

"Reassuring is the big, the biggest, the big thing." [15]

"Yeah I think even now (with a 5th child) it's still nice to someone to sort of say you know you're doing a good job...because I don't go look for it anywhere else." [34]

"Yes definitely, I'm quite a worrier so yeah it really helps me with my confidence with him as well making sure that I know that I'm doing it right and I think with me who was not having any sleep and hormones and all kicking in and then having this new thing to look after and totally out your comfort zone as well because haven't done it before so for me yeah it (reassurance) has been really important." [21]

"I think you know the reassurance is quite important because again being first child you don't know. You don't know anything until you have done it and overcome it." [27]

"Yeah you know the first time you literally take it as it comes and anything that doesn't fit these lovely textbooks that we all have a habit of reading frightens us as mums... you sort of over analyse things when you're worn out and tired because you may think you're doing something wrong as a parent when actually there's plenty of other mums and dads that go through it, it's just when you're in that moment that you're so exhausted you're like oh no, it's only happening to me." [28]

"That's really good to hear (reassurance) because we don't know. They don't come with a manual!" [10]

Impact on family life

Mothers talked a lot about the impact the baby's problem was having on their life and on the life of the father and the rest of their family. Mothers came up stoic towards their own troubles and hesitated to discuss their own stress levels. There was no clear difference in stress levels between the first time mothers and multiparous mothers.

"Oh yeah really stressful, she was unable to sleep on her back so we had to carry her all the time so it was really stressful." [5]

"Initially a lot (impact), it was awful. It did reduce me to the point of tears." [15]

"It's very tiring all round. The big boys that are 10 they worry a lot about him, you know if they wake up and hear him crying one of them immediately wants to come down and help... It's very tiring for all of them. For us as a family it's really important that we can get a more settled baby so everyone else can get some more sleep, everyone's tired." [28]

"Yeah my problem is I'm not able to put her down to sleep and do something with the rest of them which makes it difficult so things like house work, and then your mental state goes because you don't know just where to start and it just gets all on top of you." [34]

Conflicting Advice

Not all mothers had received conflicting advice or paid much attention to it, but the ones who had, were highly affected by it. It became clear that conflicting advice was one of the most upsetting things, especially for first time mothers as they felt hindered by it and felt it disrupted appropriate health care for the child.

"I've had conflicting advice so we discovered yesterday that she's got a high palate and a tongue tie for the 4 months so if that had been discovered earlier we would have had completely different feeding." [33]

"I found it quite difficult when I was in hospital because I changed wards three times so I didn't see... I was seeing a different midwife each time about feeding and they were all telling me slightly different things. I don't mean, they were really good but there was that kind of oh it might be just easier to speak to one person rather than, and then you have to start from the beginning and who am I going to get." [21]

Difficult Birth

Birth related issues were often volunteered by the mothers themselves and involved a lot of talk about assisted/interventional birth and the trauma associated with that. Mothers who had an assisted delivery or difficulties during birth were more likely to be referred to clinic by other health care professionals.

"The midwives at Dorchester [Hospital] said because it was quite a long birth and because it was a forceps delivery you were recommended." [10]

"It was because we had a bit of a long labour and her heart rate dropped so she was obviously in distress and we didn't know, it was the first time that something was wrong because she wouldn't look to the right at all and then the GP mentioned that her head would be a funny shape and then go on to have continual problems so I wanted to get it nipped in the bud." [16]

"I was advised by the midwife, she was delivery by forceps and I have a couple of friends who have come here and said they had good results from their own children." [27]

Maternal Preferences

Mothers valued honest communication and especially listening from healthcare professionals and preferred to have continuity of care where possible as well as sufficient time to interact with the clinician.

"I think it has been good for me because I've come out with, I wanted some answers and I've come out with answers." [33]

"They kept saying there's nothing wrong, she's fine and we didn't think she was...Very frustrating, worrying and frustrated. They weren't listening at all." [4]

"I think the first thing is that they listen." [28]

"It's nice to have time to ask questions." [14]

"You need the time because you want to know that you're not rushed in and out." [27]

Discussion

The goal of this research was to give mothers a voice in the health care that they choose for their infant. Although the sample was small, the luxury of in-depth interviews allowed for clarification of their desires and needs for relevant health care.

Qualitative researchers can conduct meaningful studies with small sample sizes.[11] They often choose participants for their knowledge of a specific topic and to reach thematic saturation, not to power a sample size for statistical analyses. They seek to understand the what and why of a problem, rather than statistically demonstrable associations.[11] The key to sample size is that the research continues until it is clear that no new themes emerge. Due to the relative inexperience of our research team, we continued the research past saturation to be certain that no new ideas would be missed. Also, there was overlap between themes even though comments were categorised by the predominant thought from mother's statements. Both of these reflect the inexperience of our researchers which were limitations.

We were surprised at the emphasis of the mothers on the need for reassurance. Since all mothers had seen other health care professionals (more than one and as many as 17), we thought that they would have received considerable amounts of reassurance from other health care teams. At this point, it is unknown whether it is rarer than we think, or whether there is an insatiable appetite for reassurance. What is clear is that mothers only want reassurance when it is accurately warranted. One mother's concern was that sometimes reassurance was given when there was a problem that required attention, and they preferred an honest interaction about the problem, and felt sometimes they had been reassured as a means of getting them to go away.

Reassurance is imbedded in all types of health care, and is designed to alleviate fears or doubts about the clinical situation. However, some mothers pointed out that there is a difference between blanket ("there is nothing to be concerned about") reassurance and the type of reassurance that came with adequate and solid information about the condition.

On the other hand, it was no surprise that mothers were aware of the huge limiting factors in life with baby. Exhaustion, lack of sleep, tiredness and fatigue were problems because it affected their ability to cope. Mothers constantly felt that they needed to protect the rest of the family from these exact issues, and so they bore the brunt of getting up at night for the baby. Mothers felt both physically and emotionally fatigued. This exhaustion was amplified when the baby had a problem where he couldn't be put down. One family understood that since the baby could not sleep on his back (supine as required in the SIDS protective Back-To-Sleep programme) that he needed to be held all of the time. This was a clear case for the need of chiropractic care, which is now being recognized as a key treatment approach for these babies to promote safe sleeping.[21] All health professionals must be vigilant in recognizing infants who cannot lie supine comfortably, and therefore require a rapid referral for musculoskeletal examination and treatment to face this important public health issue.[22]

Mothers often related the need for chiropractic care to the birth interventions and this was the key reason that infants were sent to our practice by medical professionals. Mothers talked freely and vociferously about the birth. Sometimes we felt as though they had never been asked before or had a chance to unload their feelings about the difficulties and details of the birth. Again, mothers felt particularly reassured that there was someone who could deal with these issues from a mechanical standpoint for their baby's comfort. There was quite a diversity in the type and amount of support that mothers had received from different health professionals. They were pleased that professionals who did not feel they could help at least referred onward for chiropractic care.

Mothers also valued listening and frank discussion about the specific needs of their child. They appreciated that it takes time to understand their concerns and time was one of the key variables valued. Too little time to have all of their questions asked or concerns discussed was a key pet peeve (although they were careful not to complain). Mothers, in general, did not complain about anything except conflicting advice, which they felt was rampant. Mothers felt there was inconsistency in information given out and this led to confusion and even to inappropriate or lack of care for their infant.

There was little discord in our findings from other research. Maternal fatigue is corroborated widely by research.[23] Seeking multiple practitioners and experiencing a wide range of inconsistent advice is common.[24]

Conclusion

The aim of this research project was to let clinician know what mothers want from health care. Chiropractors have developed guidelines for infant care that emphasize listening skills, musculoskeletal examination skills that can deal with problems arising secondary to birth trauma, specific goal oriented reassurance to alleviate anxiety, and congruent treatment and advice.[4] With high satisfaction rates, chiropractors are responding well to maternal needs for the care of their baby.[25] This indicates that shared goals of mothers and clinicians can serve as building blocks to provide the best possible patient-centered care for the infant patient.

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ORIGINAL STUDY:

Natl Health Stat Report. 2008 Dec 10;(12):1-23.

Complementary and alternative medicine use among adults and children: United States, 2007.

Barnes PM, Bloom B, Nahin RL.

ABSTRACT

Objective: This report presents selected estimates of complementary and alternative medicine (CAM) use among U.S. adults and children, using data from the 2007 National Health Interview Survey (NHIS), conducted by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS). Trends in adult use were assessed by comparing data from the 2007 and 2002 NHIS. **Methods:** Estimates were derived from the Complementary and Alternative Medicine supplements and Core components of the 2007 and 2002 NHIS. Estimates were generated and comparisons conducted using the SUDAAN statistical package to account for the complex sample design. **Results:** In 2007, almost 4 out of 10 adults had used CAM therapy in the past 12 months, with the most commonly used therapies being nonvitamin, nonmineral, natural products (17.7%) and deep breathing exercises (12.7%). American Indian or Alaska Native adults (50.3%) and white adults (43.1%) were more likely to use CAM than Asian adults (39.9%) or black adults (25.5%). Results from the 2007 NHIS found that approximately one in nine children (11.8%) used CAM therapy in the past 12 months, with the most commonly used therapies being nonvitamin, nonmineral, natural products (3.9%) and chiropractic or osteopathic manipulation (2.8%). Children whose parent used CAM were almost five times as likely (23.9%) to use CAM as children whose parent did not use CAM (5.1%). For both adults and children in 2007, when worry about cost delayed receipt of conventional care, individuals were more likely to use CAM than when the cost of conventional care was not a worry. Between 2002 and 2007 increased use was seen among adults for acupuncture, deep breathing exercises, massage therapy, meditation, naturopathy, and yoga. CAM use for head or chest colds showed a marked decrease from 2002 to 2007 (9.5% to 2.0%).

FOLLOW UP STUDY:

Natl Health Stat Report. 2015 Feb 10;(78):1-19.

Use of complementary health approaches among children aged 4-17 years in the United States: National Health Interview Survey, 2007-2012.

Black LI, Clarke TC, Barnes PM, Stussman BJ, Nahin RL

ABSTRACT

Objective: This report presents national estimates of the use of complementary health approaches among children aged 4-17 years in the United States. Selected modalities are compared for 2007 and 2012 to examine changes over time. **Methods:** Data from the 2007 and 2012 National Health Interview Survey (NHIS) were analyzed for this report. The combined sample included 17,321 interviews with knowledgeable adults about children aged 4-17 years. Point estimates and estimates of their variances were calculated using SUDAAN software to account for the complex sampling design of NHIS. Differences between percentages were evaluated using two-sided significance tests at the 0.05 level. **Results:** The use of complementary health approaches among children did not change significantly since 2007 (from 12.0% in 2007 to 11.6% in 2012). However, one approach, the use of traditional healers, showed a statistically significant decrease in use, from 1.1% in 2007 to 0.1% in 2012. No other significant decreases were identified. An increase in the use of yoga was observed during this period (from 2.3% in 2007 to 3.1% in 2012). Nonvitamin, nonmineral dietary supplements; chiropractic or osteopathic manipulation; and yoga, tai chi, or qi gong were the most commonly used complementary health approaches in both 2007 and 2012. Also consistent between 2007 and 2012 was that complementary health approaches were most frequently used for back or neck pain, head or chest cold, anxiety or stress, and other musculoskeletal conditions.

Clin Sports Med. 2015 Apr;34(2):213-31. doi: 10.1016/j.csm.2014.12.005. Epub 2015 Jan 24.

Current and emerging rehabilitation for concussion: a review of the evidence.

Broglio SP, Collins MW, Williams RM, Mucha A, Kontos AP.

ABSTRACT

Concussion is one of the most hotly debated topics in sports medicine today. Research surrounding concussion has experienced significant growth recently, especially in the areas of incidence, assessment, and recovery. However, there is limited research on the most effective rehabilitation approaches for this injury. This review evaluates the current literature for evidence for and against physical and cognitive rest and the emerging areas targeting vestibular, oculomotor, and pharmacologic interventions for the rehabilitation of sport-related concussion.

Keywords: Cognitive rest; Concussion; Pharmacologic interventions; Physical rest; Vestibular rehabilitation

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There is no such thing as infant sleep, there is no such thing as breastfeeding, there is only breastsleeping

James J. McKenna and Lee T. Gettler.

ABSTRACT

Keywords: breastsleeping; breastfeeding; bedsharing; SIDS/SUDI

Recently Mobbs et al. 2015 describe the need for, and benefits of, immediate and sustained contact, including cosleeping, to establish an appropriate foundation for optimal human infant breastfeeding, neonatal attachment and brain growth. To further support this model we propose a new concept, 'breastsleeping', aimed to help both resolve the bedsharing debate and to distinguish the significant differences (and associated advantages) of the breastfeeding-bedsharing dyad when compared with the non-breastfeeding-bedsharing situations, when the combination of breastfeeding-bedsharing is practiced in the absence of all known hazardous factors. Breastfeeding is so physiologically and behaviorally entwined and functionally interdependent with forms of cosleeping that we propose the use of the term breastsleeping to acknowledge: 1) the critical role that immediate and sustained maternal contact plays in helping to establish optimal breastfeeding; 2) the fact that normal, human (species-wide) infant sleep can only be derived from studies of breastsleeping dyads because of the ways maternal-infant contact affects the delivery of breastmilk, the milk's ingestion, the infant's concomitant and subsequent metabolism and other physiological processes, maternal and infant sleep architecture, including arousal patterns, as well as breastfeeding frequency and prolongation and; 3) that breastsleeping by mother-infant pairs comprises such vastly different behavioral and physiological characteristics compared with non-breastfeeding mothers and infants, this dyadic context must be distinguished and given its own epidemiological category and benefits to risks assessment.

Full pdf available: http://onlinelibrary.wiley.com/doi/10.1111/apa.13161/epdf

Pediatr Infect Dis J 2010 Oct;29(10):919-23. doi: 10.1097/INF.0b013e3181e232ea.

Inhibitory effect of breast milk on infectivity of live oral rotavirus vaccines.

Moon SS, Wang Y, Shane AL, Nguyen T, Ray P, Dennehy P, Baek LJ, Parashar U, Glass RI, Jiang B

ABSTRACT

Background: Live oral rotavirus vaccines have been less immunogenic and efficacious among children in poor developing countries compared with middle income and industrialized countries for reasons that are not yet completely understood. We assessed whether the neutralizing activity of breast milk could lower the titer of vaccine virus and explain this difference in vitro. **Methods:** Breast milk samples were collected from mothers who were breast-feeding infants 4 to 29 weeks of age (ie, vaccine eligible age) in India (N = 40), Vietnam (N = 77), South Korea (N = 34), and the United States (N = 51). We examined breast milk for rotavirus-specific IgA and neutralizing activity against 3 rotavirus vaccine strains-RV1, RV5 G1, and 116E using enzyme immunoassays. The inhibitory effect of breast milk on RV1 was further examined by a plaque reduction assay. **Findings:** Breast milk from Indian women had the highest IgA and neutralizing titers against all 3 vaccine strains, while lower but comparable median IgA and neutralizing titers were detected in breast milk from Korean and Vietnamese women, and the lowest titers were seen in American women. Neutralizing activity was greatest against the 2 vaccine strains of human origin, RV1 and 116E. This neutralizing activity in one half of the breast milk specimens from Indian women could reduce the effective titer of RV1 by ~2 logs, of 116E by 1.5 logs, and RV5 G1 strain by ~1 log more than that of breast milk from American women. **Interpretation:** The lower immunogenicity and efficacy of rotavirus vaccines in poor developing countries could be explained, in part, by higher titers of IgA and neutralizing activity in breast milk consumed by their infants at the time of immunization that could effectively reduce the potency of the vaccine. Strategies to overcome this negative effect, such as delaying breast-feeding at the time of immunization, should be evaluated.

Keywords: rotavirus, RV1, RV5, neutralizing activity, breast milk

Full pdf at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3704726/

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Impact of organized sports on activity, participation, and quality of life in people with neurologic disabilities.

Sahlin KB, Lexell J.

ABSTRACT

Physical activity and exercise is the mainstay of chronic disease prevention and health maintenance for all people with and without a disability, and clear evidence exists of the benefits among various populations with neurologic disabilities. However, the potential benefits of organized sports for people with neurologic disabilities are not as well explored. In this narrative review, current evidence regarding the impact of organized sports on activity, participation, and quality of life in people with neurologic disabilities of all ages is summarized, and facilitators of and barriers to participation in sports for this population are discussed. The articles reviewed were divided into 2 sets: (1) children and adolescents and (2) adults. The subjects of almost all of the studies were persons with a spinal cord injury. Children and adolescents with a disability who engaged in sports reported self-concept scores close to those of able-bodied athletes, as well as higher levels of physical activity. Adults with a spinal cord injury who engaged in organized sports reported decreased depression and anxiety, increased life satisfaction, and increased opportunity for gainful employment compared with nonathletic persons with disabilities. General facilitators, regardless of age, were fitness, fun, health, competence, and social aspects, whereas overall barriers were lack of or inappropriate medical advice and facilities, decreased self-esteem, poor finances, dependency on others, and views held by others. The importance of this topic for further research is highlighted, and suggestions for future studies are proposed.

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Association between preterm birth and thoracic musculoskeletal static alterations in adolescents.

Garcia KM, Davidson J, Goulart AL, dos Santos AM.

ABSTRACT

Objective: To compare thoracic musculoskeletal static alterations in adolescents born prematurely with those born at term and investigate neonatal and post-neonatal variables associated with thoracic alterations. **Method:** This is a cross-sectional study with 57 adolescents aged 10-15 years born prematurely and 57 adolescents born at term paired by gender and age. Photographs of the head and thorax in the front, back, and right side views were studied using a computer program. The two groups were compared in regards to: elevation of clavicles, elevation of shoulders, protrusion of the head, and anteroposterior and mediolateral thoracic length. Factor associated with thoracic disorders were evaluated by linear regression analysis. **Results:** The Preterm group had mean gestational age of 32.0±2.8 weeks and the birth weight was 1462±338 and 3342±430 g for the Preterm and Term adolescents, respectively. Preterm adolescents had higher elevation of the left shoulder (22.7±5.4° vs. 20.6±5.3°;sim, p=0.038) and the right shoulder (22.2±4.4° vs. 18.5±5.7°; p<0.001). Smaller protrusion of the head (27.8±6.1° vs. 32.4±7.9°; p=0.008), mediolateral thoracic length (22.9±2.3 cm vs. 25.1±3.1 cm; p<0.001) and anteroposterior thoracic length (19.7±2.2 cm vs. 21.1±3.4 cm; p<0.001) were found in preterm adolescents. By multiple regression analysis, factors associated with higher shoulder elevation were birth weight <1500 g (p<0.001) and mechanical ventilation during neonatal period >5 days (p=0.009). Conclusion: Adolescents born prematurely presented greater thoracic musculoskeletal static alterations compared to those born at term. Factors associated with these alterations were: very low birth weight and longer duration of mechanical ventilation in the neonatal unit.

C Chiropr Man Therap. 2014 Dec 10;22(1):40. doi: 10.1186/s12998-014-0040-9. eCollection 2014.

Do informed consent documents for chiropractic clinical research studies meet readability level recommendations and contain required elements: a descriptive study.

Twist E, Lawrence DJ, Salsbury SA, Hawk C.

ABSTRACT

Background: Informed consent documents (ICD) in research are designed to educate research participants about the nature of the research project in which he or she may participate. United States (US) law requires the documents to contain specific elements present and be written in a way that is understandable to research participants. The purpose of this research is to determine if ICDs from randomized controlled trials conducted at chiropractic colleges meet recommended readability standards and contain the 13 content items required by US law. **Methods:** This study was approved by Palmer College of Chiropractic's IRB #2012-12-3-T and was conducted between December 3, 2012 and February 14, 2013. We contacted the research directors of five chiropractic colleges that have received federal funding supporting their clinical research. A total of 13 informed consent documents from four chiropractic colleges were analyzed using the Flesch-Kincaid measurement. We assigned a grade-level readability score to the document based on the average of three separate grade level scores conducted on the three largest uninterrupted blocks of text. Content of the 13 ICDs was assessed using a 13-element checklist. A point was given for every element present in the document, giving a score range of "0, no elements are present", to "13, all elements are present." **Results:** The mean Flesch-Kincaid grade level readability was 10.8 (range 7.2 -14.0). Our sample had a mean readability score 2.8 grade levels above the generally-accepted US average reading level. Content varied among the 13 informed consent forms, ranging from only nine elements present in one document to all 13 required in five documents. Additionally, we collated the risks presented in each document. **Conclusion:** These results strongly suggest that chiropractic clinical researchers are not developing ICDs at a readability level congruent with the national average acceptable level. The low number of elements in some of the informed consent documents raises concern that not all research participants were fully informed when given the informed consent, and it may suggest that some documents may not be in compliance with federal requirements. Risk varies among institutions and even within institutions for the same intervention.

Keywords: Bioethics; Chiropractic; Clinical trials; Ethical review; Informed consent; Manual therapies

JOURNAL ABSTRACTS

Nutr J. 2014 Nov 29;13(1):111. doi: 10.1186/1475-2891-13-111.

Protective effect of breastfeeding with regard to children's behavioral and cognitive problems.

Park S, Kim BN, Kim JW, Shin MS, Yoo HJ, Cho SC.

ABSTRACT

Background: Breastfeeding has been associated with a lower risk for behavioral problems in childhood. However, it is uncertain whether these associations are mediated by the mother's or child's IQ. We examined the association between breastfeeding and attention-deficit hyperactivity disorder (ADHD) and other behavioral problems in childhood and assessed the role of the child's IQ and the mother's IQ in generating this association. **Findings:** The current study included 874 children (8-11 years) recruited from schools in five Korean cities. Mothers were asked about nursing, and the prevalence of attention-deficit hyperactivity disorder (ADHD) and behavioral problems were compared between children who were breastfed and those who were not breastfed. After adjusting for age, gender, area of residence, and yearly family income, a lack of breastfeeding was associated with increased internalizing, externalizing, and overall behavioral problems as well as the diagnosis of ADHD. These associations weakened but mostly remained significant after adjusting for child's IQ and maternal IQ. In addition, a lack of breastfeeding was associated with low child's IQ and this association weakened, but remained significant even after adjusting for maternal IQ and the diagnosis of ADHD. **Conclusions:** This study suggests that there is a protective effect of breastfeeding on childhood behavioral outcomes with a partial mediation of this effect by the child's IQ, and there is a positive effect of breastfeeding on childhood intelligence with a partial mediation of this effect by the child's attention problem.

Clin J Sport Med. 2015 Jan;25(1):30-5. doi: 10.1097/JSM.0000000000000105.

A closer look at overuse injuries in the pediatric athlete.

Stracciolini A, Casciano R, Friedman HL, Meehan WP 3rd, Micheli LJ.

ABSTRACT

Objective: To examine male-female differences in pediatric overuse sports injuries. **Study Design:** Cross-sectional epidemiological study. **Setting:** Tertiary level sports medicine division in a large academic pediatric medical center. **Participants:** Five percent probability sample of patients 5 to 17 years seen from January 1, 2000 to December 31, 2009. About 3813 charts reviewed. Final study cohort included 1614 patients. **Intervention:** Nonlinear decomposition analysis of male-female differences in overuse injuries. **Main Outcome Measures:** Age, body mass index, history of previous injury, and activity type (contact/collision, team vs individual, "high overuse"). **Results:** Females sustained approximately half of the total injuries. Fifty-two percent of the injuries were overuse, 61% to the lower extremity. A high proportion of tennis players, swimmers, dancers, track athletes, runners, gymnasts, and cheerleaders were seen for overuse injuries. Females sustained more overuse injuries versus males (63% and 40%, respectively). Males playing team sports have a 5.3 times higher likelihood of being seen for an overuse injury compared with males not playing team sports ($P < 0.01$). High-overuse sport participation increased overuse injury odds by a factor of 10 for males versus 3.6 for females ($P \leq 0.01$ for males and females). Forty-six percent of the male-female difference in overuse injuries could be attributed to sport/activity characteristics-contact/collision, team, and high overuse. **Conclusions:** A large proportion of the sex discrepancy in overuse injuries in this cohort was attributed to compositional differences in sports played. Future research is needed to investigate the independent effect of sex on risk for pediatric sports injuries. **Clinical Relevance:** This study provides a unique analysis of male-female differences in pediatric sports injuries and is the first study to estimate the impact of the different characteristics (ie, collision, team, high overuse) of sports children play on overuse injuries sustained by young athletes. The findings will help guide future prevention efforts.

Eur Spine J. 2014 Dec;23(12):2572-85. doi: 10.1007/s00586-014-3307-x. Epub 2014 Apr 29.

Are current scoliosis school screening recommendations evidence-based and up to date? A best evidence synthesis umbrella review.

Plaszewski M, Bettany-Saltikov J.

ABSTRACT

Purpose: Recommendations addressing school screening for adolescents with idiopathic scoliosis are contradictory. Consequently a critical evaluation of the methodological quality of available systematic reviews, including those upon which these recommendations are based, was conducted. **Methods:** Articles meeting the minimal criteria to be considered a systematic review were included for a best evidence synthesis, umbrella review of secondary studies. The primary outcome measure was "any recommendation addressing the continuation, or not, of school screening programs". Multiple general bibliographic databases, guideline registries, as well as websites of institutions were searched. The AMSTAR tool was used to critically appraise the methodology of included reviews. Venn diagrams were created to examine potential overlaps across included papers within different reviews. **Results:** Six reviews undertaken between 2002 and 2011, scored as moderate to low quality, were included. The 2012 US Preventive Services Task Force recommendation against screening was found to be based on an outdated (2004) low-quality review, whilst two higher quality and more recent (2009 and 2010) reviews support the continuation of school screening programs. **Conclusions:** As the existing recommendations supporting screening are based on moderate quality evidence whilst the recommendations against screening are based on low-quality evidence, the latter recommendations appear to be both unconvincing and methodologically invalid.

Am J Clin Nutr. 2014 Dec;100(6):1422-36. doi: 10.3945/ajcn.114.095315. Epub 2014 Oct 15.

Effect of n-3 PUFA supplementation on cognitive function throughout the life span from infancy to old age: a systematic review and meta-analysis of randomized controlled trials.

Jiao J, Li Q, Chu J, Zeng W, Yang M, Zhu S.

ABSTRACT

Background: n-3 PUFAs play an important role in cognitive function. **Objective:** The objective was to investigate the effect of n-3 PUFA supplements on cognitive development, function, and decline throughout the life span. **Design:** The study included randomized controlled trials and provided ≥3 mo of treatment. Potential studies were independently screened in duplicate, and study characteristics and outcomes were extracted. A meta-analysis was performed by using fixed- or random-effects models. The results are presented as standardized mean differences (SMDs) with 95% CIs. **Results:** Of the 3692 citations retrieved, 34 studies of a total of 12,999 participants (1031 infants, 1517 children, 3657 adults, and 6794 elderly individuals) were included. Compared with placebo, n-3 PUFA supplements significantly improved cognitive development in infants, including the Mental Development Index (SMD: 0.33; 95% CI: 0.15, 0.52), the Psychomotor Development Index (0.27; 95% CI: 0.09, 0.45), and language (0.27; 95% CI: 0.13, 0.42), motor (0.29; 95% CI: 0.14, 0.43), and cognitive (0.31; 95% CI: 0.16, 0.45) abilities. However, n-3 PUFAs did not promote cognitive function in terms of composite memory, executive function, and processing speed domains in children, adults, or the elderly, except for the attention domain. No association was found between n-3 PUFA intake and improvements in cognitive performance in terms of recognition, immediate and delayed word recall, digit span backward and forward tests, rapid visual information processing, verbal fluency, and simple and choice reaction times. In addition, n-3 PUFA supplements were not associated with improvements in cognitive decline or with any effects on Alzheimer disease in elderly people. **Conclusions:** n-3 PUFA supplements may significantly improve cognitive development in infants but do not improve cognitive performance in children, adults, or the elderly. n-3 PUFA intake, especially that of DHA supplements, may benefit cognitive development during infancy.

JOURNAL ABSTRACTS

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Integrated medical-behavioral care compared with usual primary care for child and adolescent behavioral health, a meta-analysis

Joan Rosenbaum Asarnow, PhD; Michelle Rozenman, PhD; Jessica Wiblin, BA, Lonnie Zeltzer, MD.

ABSTRACT

Importance: Recent health care legislation and shifting health care financing strategies are transforming health and behavioral health care in the United States and incentivizing integrated medical-behavioral health care as a strategy for improving access to high-quality care for behavioral health conditions, enhancing patient outcomes, and containing costs. **Objective:** To conduct a systematic meta-analysis of randomized clinical trials to evaluate whether integrated medical-behavioral health care for children and adolescents leads to improved behavioral health outcomes compared with usual primary care. **Data Sources:** Search of the PubMed, MEDLINE, PsycINFO, and Cochrane Library databases from January 1, 1960, through December 31, 2014, yielded 6792 studies, of which 31 studies with 35 intervention-control comparisons and 13 129 participants met the study eligibility criteria. **Study Selection:** We included randomized clinical trials that evaluated integrated behavioral health and primary medical care in children and adolescents compared with usual care in primary care settings that met prespecified methodologic quality criteria. **Data Extraction and Synthesis:** Two independent reviewers screened citations and extracted data, with raw data used when possible. Magnitude and direction of effect sizes were calculated. **Main Outcomes and Measures:** Meta-analysis with a random effects model were conducted to examine an overall effect across all trials, and within intervention and prevention trials. Subsequent moderator analyses for intervention trials explored the relative effects of integrated care type on behavioral health outcomes. **Results:** Meta-analysis with a random-effects model indicated a significant advantage for integrated care interventions relative to usual care on behavioral health outcomes (d = 0.32; 95% CI, 0.21-0.44; P < .001). Moderator analyses indicated larger effects for treatment trials that targeted diagnoses and/or elevated symptoms (d = 0.42; 95% CI, 0.29-0.55; P < .001) relative to prevention trials (d = 0.07; 95% CI, -0.13 to 0.28; P = .49). The probability was 66% that a randomly selected youth would have a better outcome after receiving integrated medical-behavioral treatment than a randomly selected youth after receiving usual care. The strongest effects were seen for treatment interventions that targeted mental health problems and those that used collaborative care models. **Conclusions and Relevance:** Our results, demonstrating the benefits of integrated medical-behavioral primary care for improving youth behavioral health outcomes, enhance confidence that the increased incentives for integrated health and behavioral health care in the US health care system will yield improvements in the health of children and adolescents.

Environ Health Perspect. 2015;123(7):712-716.

Ambient heat and sudden infant death: a case-crossover study spanning 30 years in Montreal, Canada

Nathalie Auger; William D. Fraser, Audrey Smargiassi,Tom Kosatsky.

ABSTRACT

Background: Climate change may lead to more severe and extreme heat waves in the future, but its potential impact on sudden infant death–a leading cause of infant mortality–is unclear. **Objectives:** We sought to determine whether risk of sudden infant death syndrome (SIDS) is elevated during hot weather. **Methods:** We undertook a case-crossover analysis of all sudden infant deaths during warm periods in metropolitan Montreal, Quebec, Canada, from 1981 through 2010. Our analysis included a total of 196 certified cases of SIDS, including 89 deaths at 1—2 months of age, and 94 at 3—12 months. We estimated associations between maximum outdoor temperatures and SIDS by comparing outdoor temperatures on the day of or day before a SIDS event with temperatures on control days during the same month, using cubic splines to model temperature and adjusting for relative humidity. **Results:** Maximum daily temperatures of ≥ 29°C on the same day were associated with 2.78 times greater odds of sudden infant death relative to 20°C (95% CI: 1.64, 4.70). The likelihood of sudden death increased steadily with higher temperature. Associations were stronger for infants 3—12 months of age than for infants 1—2 months of age, with odds ratios of 3.90 (95% CI: 1.87, 8.13) and 1.73 (95% CI: 0.80, 3.73), respectively, for 29°C compared with 20°C on the day of the event. **Conclusions:** High ambient temperature may be a novel risk factor for SIDS, especially at ≥ 3 months of age. Climate change and the higher temperatures that result may account for a potentially greater proportion of sudden infant deaths in the future.

NCHS Data Brief Number 201, May 2015

Association between diagnosed ADHD and selected characteristics among children aged 4—17 years: United States, 2011—2013

Patricia N. Pastor, PhD; Cynthia A. Reuben, MA; Catherine R. Duran, BS; and LaJeana D. Hawkins, MPH, CHES.

KEY FINDINGS

• In 2011—2013, 9.5% of children aged 4—17 years were ever diagnosed with attention deficit hyperactivity disorder (ADHD). For those aged 4—5, prevalence was 2.7%, 9.5% for those aged 6—11, and 11.8% for those aged 12—17.

• Among all age groups, prevalence of ever diagnosed ADHD was more than twice as high in boys as girls.

• Among those aged 6—17, prevalence was highest among non-Hispanic white children and lowest among Hispanic children.

• Among all age groups, prevalence was higher among children with public insurance compared with children with private insurance.

• Among children aged 4—11, prevalence was higher for children with family income less than 200% of the federal poverty threshold than for children with family income at 200% or more of the poverty threshold.

Attention deficit hyperactivity disorder (ADHD) is the most common neurobehavioral disorder diagnosed in U.S. children (1). While this disorder is most often diagnosed in children when they are in elementary school, it is increasingly being identified in preschool children (2—5). This report describes the prevalence of diagnosed ADHD among children aged 4—17 years using parent-reported data collected in a large, nationally representative health survey. Differences in the prevalence of diagnosed ADHD are examined by selected demographic and socioeconomic variables: the child's sex, race and Hispanic ethnicity, health insurance coverage, and poverty status for all children aged 4—17 and among age groups 4—5, 6—11, and 12—17.

Keywords: child mental health, behavioral disorders, National Health Interview Survey

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Cyberbullying: a 21st century health care phenomenon

Jemica Carter, PhD, RN; Feleta L. Wilson, PhD, RN, FAAN.

ABSTRACT

This study examined bullying and cyberbullying prevalence among 367 adolescents 10 to 18 years of age who were attending schools and community organizations in suburban and urban neighborhoods in the Midwest United States. The correlational design investigated adolescents' daily use of technology that could be used to cyberbully peers, such as cell phones, computers, email, and the Internet. Results showed that 30% of participants had been bullied during school, and 17% had been cyberbullied, with online social networking sites the most common media employed (68%). The majority of participants owned or had access to computers (92%), email accounts (88%), social networking accounts (e.g., Facebook™ or MySpace™) (82%), and cell phones (79%). Daily technology use included an average of two hours on a computer and a median of 71 text messages per day. Logistic regression analysis revealed no significant differences in bullying or cyberbullying prevalence based on location (urban or suburban) or demographic characteristics. Given the substantial presence of cyberbullying and the increase in technology use among adolescents in the 21st century, nurses need knowledge of the phenomenon to plan assessments in clinical practice. Early identification and assessment of cyberbullying victims and perpetrators, and development and implementation of effective interventions are needed to reduce this form of bullying among adolescents.

JOURNAL ABSTRACTS

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Mortality in children, adolescents, and adults with attention deficit hyperactivity disorder: a nationwide cohort study.

Dalsgaard S, Østergaard SD, Leckman JF, Mortensen PB, Pedersen MG.

ABSTRACT

Background: Attention deficit hyperactivity disorder (ADHD) is a common mental disorder associated with factors that are likely to increase mortality, such as oppositional defiant disorder or conduct disorder, criminality, accidents, and substance misuse. However, whether ADHD itself is associated with increased mortality remains unknown. We aimed to assess ADHD-related mortality in a large cohort of Danish individuals. **Methods:** By use of the Danish national registers, we followed up 1·92 million individuals, including 32,061 with ADHD, from their first birthday through to 2013. We estimated mortality rate ratios (MRRs), adjusted for calendar year, age, sex, family history of psychiatric disorders, maternal and paternal age, and parental educational and employment status, by Poisson regression, to compare individuals with and without ADHD. **Findings:** During follow-up (24·9 million person-years), 5580 cohort members died. The mortality rate per 10,000 person-years was 5·85 among individuals with ADHD compared with 2·21 in those without (corresponding to a fully adjusted MRR of 2·07, 95% CI 1·70-2·50; p<0·0001). Accidents were the most common cause of death. Compared with individuals without ADHD, the fully adjusted MRR for individuals diagnosed with ADHD at ages younger than 6 years was 1·86 (95% CI 0·93-3·27), and it was 1·58 (1·21-2·03) for those aged 6-17 years, and 4·25 (3·05-5·78) for those aged 18 years or older. After exclusion of individuals with oppositional defiant disorder, conduct disorder, and substance use disorder, ADHD remained associated with increased mortality (fully adjusted MRR 1·50, 1·11-1·98), and was higher in girls and women (2·85, 1·56-4·71) than in boys and men (1·27, 0·89-1·76). **Interpretation:** ADHD was associated with significantly increased mortality rates. People diagnosed with ADHD in adulthood had a higher MRR than did those diagnosed in childhood and adolescence. Comorbid oppositional defiant disorder, conduct disorder, and substance use disorder increased the MRR even further. However, when adjusted for these comorbidities, ADHD remained associated with excess mortality, with higher MRRs in girls and women with ADHD than in boys and men with ADHD. The excess mortality in ADHD was mainly driven by deaths from unnatural causes, especially accidents.

FUNDING: This study was supported by a grant from the Lundbeck Foundation.

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Nutrition Management of Gastrointestinal Symptoms in Children with Autism Spectrum Disorder: Guideline from an Expert Panel

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ABSTRACT

Autism spectrum disorder (ASD) is characterized by a core deficit in social communication with concomitant repetitive/perseverative behaviors and restriction in interests,1 and individuals with ASD experience varying degrees of impairment.2 The estimated prevalence of ASD in pediatric populations has climbed dramatically during the past decade, with approximately 1 in every 68 children currently meeting diagnostic criteria in the United States.3 High prevalence occurs against a backdrop of increased health care costs4 and social burden.

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Randomized trial of peanut consumption in infants at risk for peanut allergy.

Du Toit G, Roberts G, Sayre PH, Bahnson HT, Radulovic S, Santos AF, Brough HA, Phippard D, Basting M, Feeney M, Turcanu V, Sever

ABSTRACT

Background: The prevalence of peanut allergy among children in Western countries has doubled in the past 10 years, and peanut allergy is becoming apparent in Africa and Asia. We evaluated strategies of peanut consumption and avoidance to determine which strategy is most effective in preventing the development of peanut allergy in infants at high risk for the allergy. **Methods:** We randomly assigned 640 infants with severe eczema, egg allergy, or both to consume or avoid peanuts until 60 months of age. Participants, who were at least 4 months but younger than 11 months of age at randomization, were assigned to separate study cohorts on the basis of preexisting sensitivity to peanut extract, which was determined with the use of a skin-prick test–one consisting of participants with no measurable wheal after testing and the other consisting of those with a wheal measuring 1 to 4 mm in diameter. The primary outcome, which was assessed independently in each cohort, was the proportion of participants with peanut allergy at 60 months of age. **Results:** Among the 530 infants in the intention-to-treat population who initially had negative results on the skin-prick test, the prevalence of peanut allergy at 60 months of age was 13.7% in the avoidance group and 1.9% in the consumption group (P<0.001). Among the 98 participants in the intention-to-treat population who initially had positive test results, the prevalence of peanut allergy was 35.3% in the avoidance group and 10.6% in the consumption group (P=0.004). There was no significant between-group difference in the incidence of serious adverse events. Increases in levels of peanut-specific IgG4 antibody occurred predominantly in the consumption group; a greater percentage of participants in the avoidance group had elevated titers of peanut-specific IgE antibody. A larger wheal on the skin-prick test and a lower ratio of peanut-specific IgG4:IgE were associated with peanut allergy. **Conclusions:** The early introduction of peanuts significantly decreased the frequency of the development of peanut allergy among children at high risk for this allergy and modulated immune responses to peanuts. (Funded by the National Institute of Allergy and Infectious Diseases and others; ClinicalTrials.gov number, NCT00329784.).