



# Paediatric Chiropractic

SAFETY IS THE FIRST PRIORITY

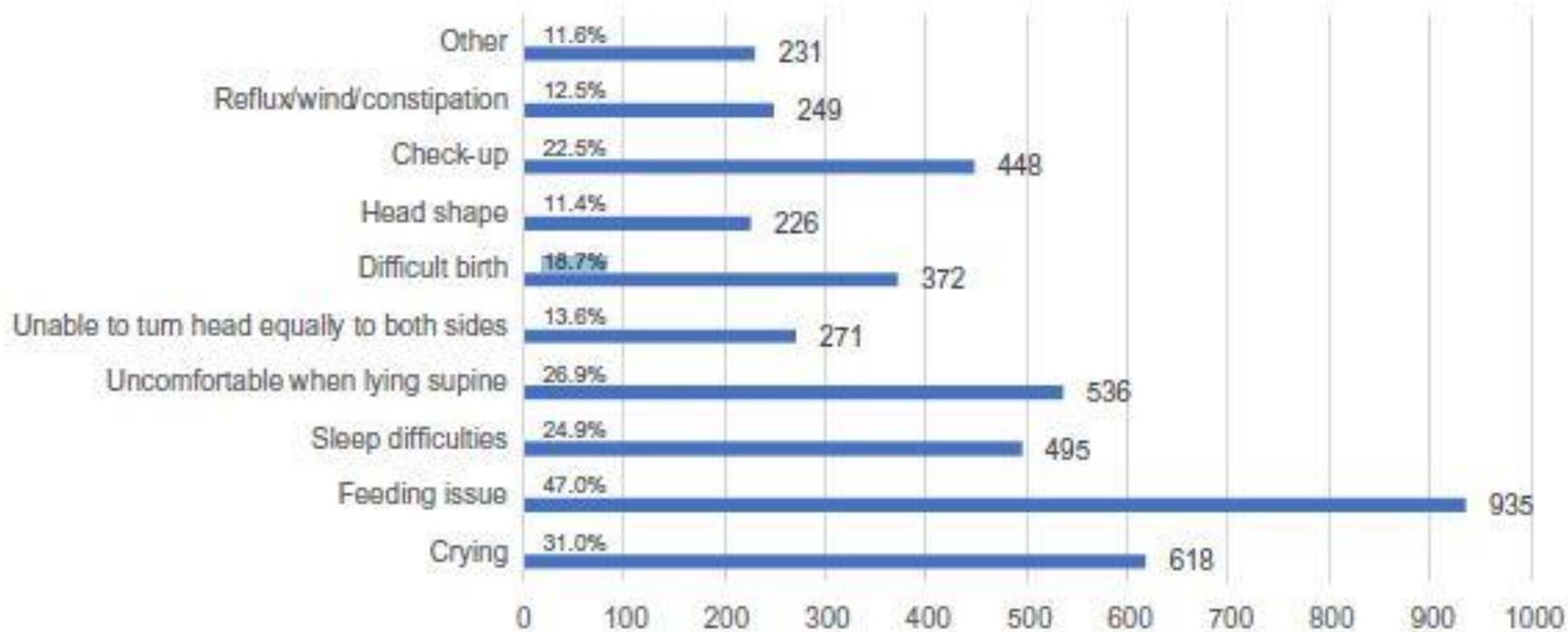


**PCCSA**

Paediatric Chiropractic South Africa

# History and Development

- ▶ DD Palmer on the 18<sup>th</sup> September 1895
- ▶ Significant growth
- ▶ “A health profession concerned with the diagnosis treatment and prevention of mechanical disorders of the musculoskeletal system and the effects of these disorders...” WFC 2001
- ▶ Most common patients and referral patterns (Hestbaek et al. 2009, Miller 2010 and Allen-Unhammer et al 2016)



**Fig 1.** Reason for infant presentations to chiropractic clinics (n = 1991).

# Anatomy

- ▶ 30% of the spine is ossified (Akbarnia et al 2011)
- ▶ Compressive resistance of cartilage in adult 14-59MPa – child 2.8MPa (Kerin et al. 1998)
- ▶ 80% neonatal bodyweight is water, 45% extracellular vs 15% extracellular adult (Sinclair and Dangerfield 2005)
- ▶ Underdeveloped Uncinate processes
- ▶ IVD equal in height to VB and most of IVB is NP
- ▶ Joint angulation is different (Lustrin 2003)

# Mechanics

- ▶ Infants are hypermobile (Clarke et al. 2007)
- ▶ Higher elastic properties of joint capsule and ligaments (Gore et al. 2009)
- ▶ Lack voluntary activation of striated muscle (Lustrin et al. 2003)
- ▶ Rom and neutral zones are greater (Nuckley et al. 2004)
- ▶ C1,2,3 facets are nearly horizontal during first year of life (Huelke 1998)

# Chiropractic Guidelines

- ▶ Chiropractic Guidelines (Hawk et al. 2016)
  - ▶ Patient size
  - ▶ Structural development
  - ▶ Flexibility
  - ▶ Preferences
- ▶ Force (Marchand 2015, Todd et al. 2016)
  - ▶ Maximum load infant cartilage 20N
  - ▶ Adult treatment = 112.4N, extrapolate by 10x's = 12.4N
  - ▶ Low Force, No Force techniques = 2N – 2.6N
  - ▶ Under values associated with adverse reactions

# Adverse Events

- ▶ **ADVERSE EVENTS DUE TO CHIROPRACTIC AND OTHER MANUAL THERAPIES FOR INFANTS AND CHILDREN: A REVIEW OF THE LITERATURE**  
(Todd et al. 2016)
- ▶ Reviewed databases from inception to 2014. Serious events in children/infants receiving chiropractic, physiotherapy, osteopathy, manual medical therapy
  - ▶ 15 AE found
  - ▶ States “appropriate technique selection and thorough history/physical exam may further reduce AE across all manual therapies

# Adverse Events - continued

- ▶ **ADVERSE EFFECTS OF SPINAL MANIPULATIVE THERAPY IN CHILDREN YOUNGER THAN 3 YEARS: A RETROSPECTIVE STUDY IN A CHIROPRACTIC TEACHING CLINIC** . Miller and Benfield 2008
  - ▶ 3 year retrospective study of case files of 781 paediatric patients 5250 patients AECC
  - ▶ 7 adverse events reported, 1 reaction per 749 treatments
  - ▶ None were serious, i.e cleared within 24 hrs and didn't require medical intervention
- ▶ **IS CHIROPRACTIC PEDIATRIC CARE SAFE? A BEST EVIDENCE TOPIC**. Doyle 2011
  - ▶ Literature review
  - ▶ No serious AE reported since 1992.
  - ▶ One child in 100-200 may suffer mild AE (irritability, soreness less than 24hrs resolving without need for additional care beyond the initial chiropractic recommendations)

# Efficacy

- ▶ Breastfeeding (Miller et al. 2009)
  - ▶ 114 cases of breastfeeding issues – 80% back to EBF
  - ▶ Chiropractic useful adjunct in BF issues with mechanical component
  - ▶ Public health issue, glad to participate
- ▶ Plagiocephaly (Douglas et al. 2016)
  - ▶ Statistically and clinically significant reduction in plagiocephaly measures for a cohort under chiropractic care
  - ▶ Observational – cannot establish cause and effect, however results are encouraging
- ▶ Plagiocephaly (Carera-Martos et al. 2015)
  - ▶ Plausible benefit of manual therapy when added to standard treatment of plagiocephaly.
  - ▶ Reducing treatment duration in infants with severe non-synostotic plagiocephaly

# Crying

- ▶ **EFFICACY OF CHIROPRACTIC MANUAL THERAPY ON INFANT COLIC: A PRAGMATIC SINGLE-BLIND, RANDOMIZED CONTROLLED TRIAL**

Miller et al. 2012

- ▶ Single blind RCT
- ▶ 104 patients
- ▶ Statistical change in treatment groups but not between blind/non blinded

- ▶ **Manual therapy for unsettled, distressed and excessively crying infants: a systematic review and meta-analyses**

- ▶ Carnes et al. 2018

- ▶ Moderate strength evidence – reduction in crying 1.27Hrs per day
- ▶ Less robust findings around sleep, parent-child relation and global improvement.
- ▶ Comment “Not sure how meaningful these changes are to parents”

# Crying

## ▶ **Maternal Report of Outcomes of Chiropractic Care for Infants.**

Miller et al. 2019

- ▶ Observational study 2001 mothers
- ▶ Statistically significant changes in domains of Feeding issues, Sleep, Crying, Supine sleep, Tummy time.
- ▶ Maternal ratings of anxiety, depression and satisfaction – statistically significant changes
- ▶ 82% definite improvement on PGIC
- ▶ 95% cost effective
- ▶ 90.9% satisfaction an 8 or higher out of 11
- ▶ Minor self limiting SE noted 5.8% - no AE – prospective evaluation of safety

# The Future

- ▶ Large RCT in Denmark
- ▶ Continue to work side by side with paediatric health care providers