

An Introduction to the BC Children's Hospital Self-Injurious Behaviour Clinic *with a focus on* Head Banging and Helmets: Appraising & Applying Evidence

Land Acknowledgement



I am grateful to walk, work and raise my family on the unceded territories of the Coast Salish Peoples: The Musqueam, the Squamish and the Tsleil-Waututh Nations

Overview

1. Introduction to BCCH Self-Injurious Behaviour Clinic

2. Head Banging & Helmets

- ▶ Background Information & Overview
- ▶ Critical Appraisal of the Evidence
- ▶ Clinical Application
- ▶ Practical Considerations for Helmet Use



Objective

1. Introduce therapists within and connected to BCCH to the Self-Injurious Behaviour Clinic
2. Explore literature regarding helmet efficacy in decreasing risks associated with head-banging, and hence opportunity to increase occupational participation
3. Review clinical utility of helmets and recommendations



SIB Clinic Purpose

- ▶ Self Injurious Behaviour (SIB) affects up to 50% of children with ASD (Summers et al. 2017)
- ▶ SIB also affects children with specific genetic conditions – for some syndromes affecting as many as 85% (Deb, 1998)

The Self-Injurious Behaviour Clinic at BC Children's Hospital is an interdisciplinary clinic and provides a fourth-tier assessment and recommendations for children with neurodevelopmental differences who experience self-injurious behaviour in BC & the Yukon

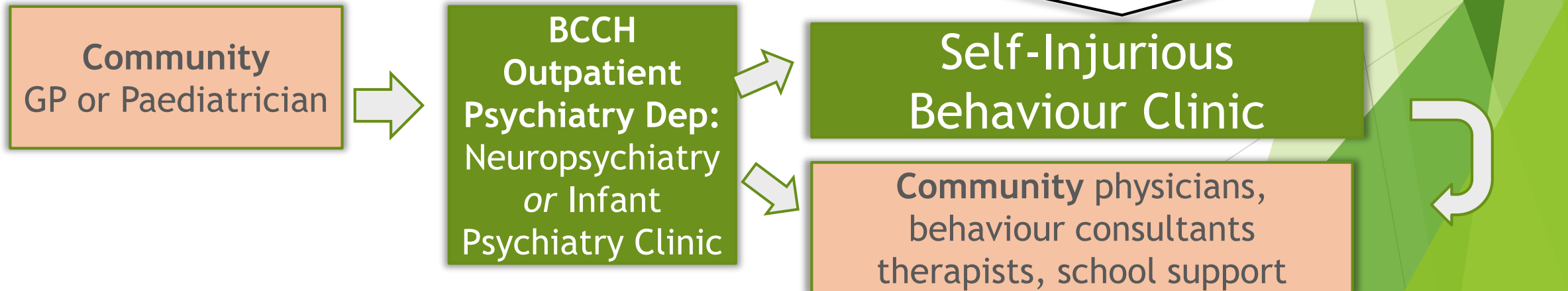
SIB Team: An Interdisciplinary Approach

- ▶ **Behaviour Analyst** (Katie Allan)
- ▶ **Booking Clerk** (Zumana Chowdhury)
- ▶ **Geneticist** (Dr. Lewis)
- ▶ **Neurologist** (Dr. Connolly/Dr. Datta)
- ▶ **Occupational Therapist** (Mary Glasgow Brown)
- ▶ **Paediatrician** (Dr. Richardson)
- ▶ **Paediatrician specializing in Sleep** (Dr. Ipsiroglu)
- ▶ **Psychiatrist** (Dr. Friedlander)
- ▶ **Social Worker** (Erika Ono)
- ▶ **Speech Therapist** (Beverly Jones)
- ▶ **Guests:** Pain, Dentistry

Self-Injurious Behaviour Clinic

Referral Process & Client Journey

1. Individual Assessments for child with:
Psychiatry
Paediatrician
Allied Health
2. Case Consultation with Full SIB Team
3. Family Feedback meeting with Community Support Members



Hitting my head: Naoki Higashida

“When I erupt into anger, I start hitting my head. I want to take control of the situation, but my brain won’t let me.

Neurotypical people never experience this, I guess.

My rage is directed at my brain, so without thinking anything through, I set about punching my own head.”

(Higashida, 2017)

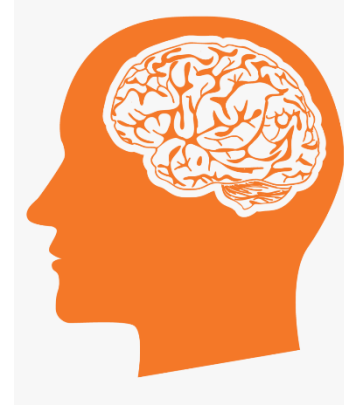


Background

- ▶ Head-banging to sleep may be considered part of a “**rhythmic movement disorder**”, which many children outgrow without intervention (Gwyther, Walters & Hill, 2017)
- ▶ **Head-banging is also a type of self-injurious behaviour** expressed by some children, youth and adults with Intellectual Disabilities, Autism, and certain genetic conditions (Edelson, 2016)



What is the concern?



- ▶ **Force of head-banging---** similar to boxing blows or karate hits (Newell, Challis, Boros, & Bodfish, 2002)
- ▶ Increased concern for **concussions and complications** for children and youth in sports (Rose et al, 2015)
- ▶ **Chronic Traumatic Encephalopathy (CTE)** and head-banging (Hof, Knabe, Bourvier, Bouras, 1991)
- ▶ Occupational therapists may be called on to support children who are excluded from participating in activities due to safety concerns linked to head banging

Literature Review & Critical Appraisal

Multiple databases:
CINAHL, PsychInfo,
Medline, Google
Scholar

Search terms: Head-
banging, helmets,
concussion, Self-
Injurious Behaviour,
SIB, Autism,
Intellectual Disability

PICO Question

Findings: 4 Systematic
Reviews--- ONE
relevant

Searching the Literature

- ▶ **Population:** Children, Youth & Adults with Intellectual Disability who express head banging as a form of self-injurious behaviour
- ▶ **Intervention:** Helmet use
- ▶ **Control:** None
- ▶ **Outcome:** Decrease in head-banging

Critical Appraisal: Results

Systematic Review of Restraint Interventions for Challenging Behaviour Among Persons with Intellectual Disabilities: Focus on Effectiveness in Single-Case Experiments (Heyvaert, M., Saenen, L., Maes, B. and Onghena, P. 2014).

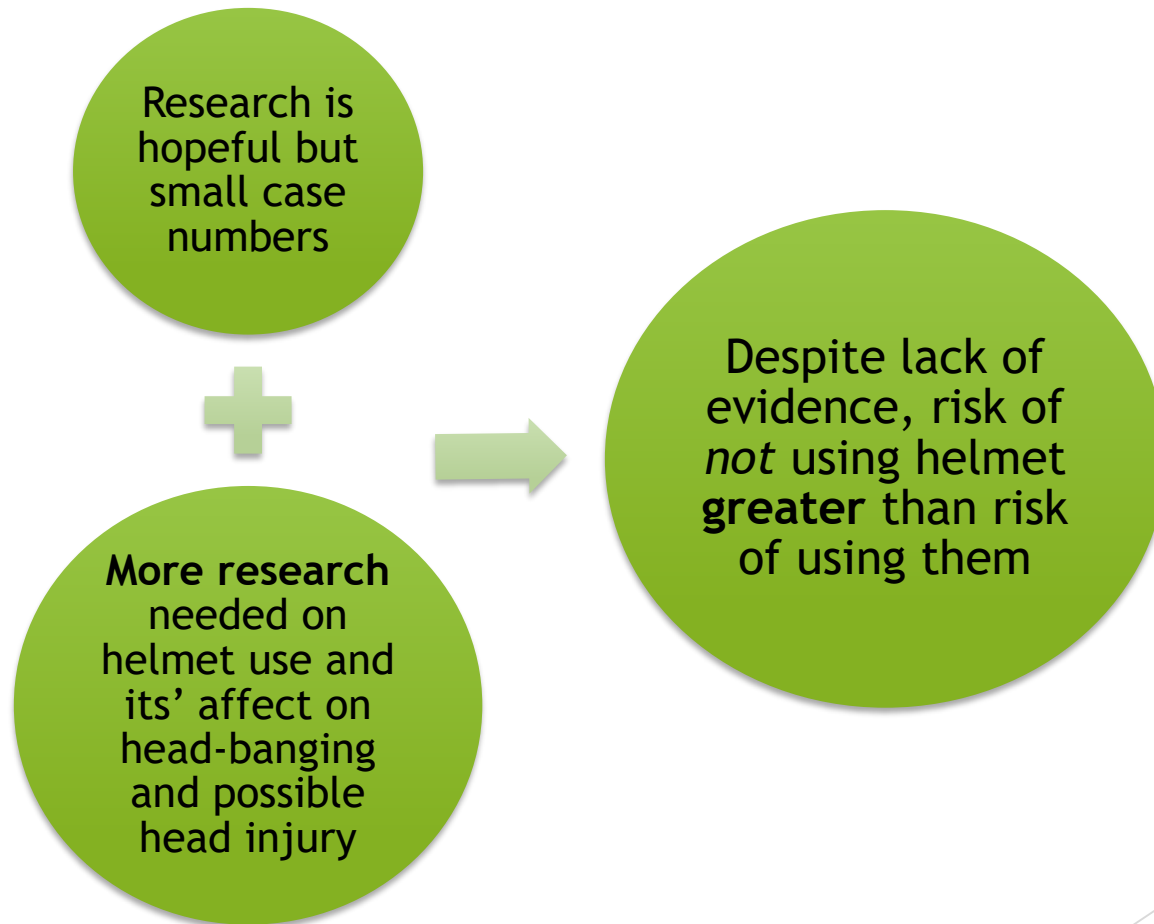
- Analysis of **59 Articles** with **94 cases** pertaining to restraint interventions.
- Of these: **6 using helmets** (“mechanical restraint”)
- On average restraints are highly effective in reducing challenging behaviour [including self-injurious behaviour].
- Amstar: 4/11 (Moderate Quality)

Systematic Review of Restraint Interventions for Challenging Behaviour Among Persons with Intellectual Disabilities: Focus on Effectiveness in Single-Case Experiments (Heyvaert, M., Saenen, L., Maes, B. and Onghena, P. 2014).

**Critical
Appraisal:
Helmet Use**

Study	Age	Gender	Intervention
Le & Smith (2002)- Case C	35	Male	Helmet
LeBlanc <i>et al.</i> (1997)	4	Female	Helmet with facemask & response blocking
Borrero <i>et. Al</i> (2002)- Case B	8	Male	Helmet
Cameron <i>et. Al</i> (1996)- Case A	16	Female	Helmet
McKerchar <i>et al.</i> (2001) Case A	10	Male	Soft padded helmet & Response blocking
Moore <i>et al.</i> (2004)	12	Female	Helmet & other protective equipment

Clinical Applicability: Should we Recommend helmets?



Best Practice Recommendations

1. **Individualized assessment and recommendations needed:**
 - i. When is the head-banging most a concern and how does it impact Occupational Participation?
 - ii. What is the child banging? (Hand to head, head to hard object, head to others?)
 - iii. Consider using the Sensory Profile-2 and a concussion assessment (e.g. SCAT-5)

Best Practice Recommendations cont.

2. **Work with all team members to create a plan for helmet use and to explore contributing factors to head-banging:**

- ▶ Physician- *pain*
- ▶ Psychiatrist- *Anxiety, ADHD, Tics, other*
- ▶ SLP- *communication*
- ▶ Behaviour Analyst- *behaviour*

3. **Helmets may help** decrease risk of abrasions to head and decrease impact but head banging may still create risk associated with *contrecoup*.

4. **Helmets may not be appropriate for some children do to:**

- ▶ Refusal to wear helmet
- ▶ Unable to get helmet on the child at appropriate time
- ▶ Contraindications (e.g. difficulty with temperature regulation).

Concussion Signs & Symptoms

Physical changes

- Headache
- Nausea or vomiting
- Vision changes
- Loss of consciousness
- Irritation from light or sound
- Loss of balance, poor co-ordination
- Decreased playing ability

Changes in behaviour

- Irritability
- Sadness
- Anxiety
- Inappropriate emotions

Concussion Signs & Symptoms

Thinking problems

- Slowed reaction times
- Confusion
- Memory loss or difficulty concentrating
- Feeling dazed

Trouble with sleep

- Drowsiness
- Trouble falling asleep
- Sleeping more than usual
- Sleeping less than usual

(Sick Kids, 2021)



Discussion: Helmet Considerations



Purpose of helmets

- ▶ Abrasions, bruises, concussion, brain injury



Types

- ▶ Hard Helmets
- ▶ Soft Helmets
- ▶ Modifications (face or mouth guards; ear guards, strapping)

Sources

- ▶ Sports (E.g. Nutcase Helmets, martial arts, downhill mountain biking)
- ▶ Therapeutic (E.g. Toppen, Danmar)

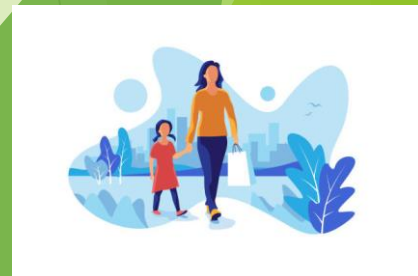
Risks

- ▶ Strapping/choking
- ▶ Purpose of helmet may not match Child's behaviour

Conclusion



- ▶ **Head banging** is a complex behaviour that affects a child's safety and occupations
- ▶ **Helmets** are one part of addressing risk and consequences of head-banging for children and youth
- ▶ **Helmets** may not be practical for all children
- ▶ Occupational therapists can assess and recommend appropriate helmets and recommendations regarding their use
- ▶ **More research is needed** regarding risks associated with head-banging and helmet efficacy



References

- ▶ Deb, S. (1998). Self-injurious behaviour as part of genetic syndromes. *British Journal of Psychiatry*, 172(5), 385-388. doi:10.1192/bjp.172.5.385
- ▶ Edelson, S. (2016). Understanding and treating self-injurious behavior in Autism: A multi-disciplinary perspective. (S. Edelson and J. Botsford Johnson, Eds.) Jessica Kingsley Publishers
- ▶ Gwyther, A. R., Walters, A. S., & Hill, C. M. (2017). Rhythmic movement disorder in childhood: an integrative review. *Sleep medicine reviews*, 35, 62-75.
- ▶ Hof, P, Knabe, R., Bourvier P., Bouras, C. (1991) *Neuropathological observations in a case of autism presenting with self-injury behaviour*. Acta Neuropathol. 82 (4), 321-326.
- ▶ The Hospital for Sick Children [Sick Kids]. (2021). About Kids Health: Concussions. <https://www.aboutkidshealth.ca/concussion>

References

- ▶ Newell, K.M., Challis, J.H.; Boros, R.L.; Bodfish, J.W. *Further evidence on the dynamics of self-injurious behaviours: Impact forces and limb motions*. American Journal of Mental Retardation. 107, 60-68.
- ▶ Higashida, Naoki. (2017). Fall down 7 times get up 8: A young man's voice from the silence of autism. (Yoshida, KA & Mitchell, D., Trans). Random House.
- ▶ Hof, P, Knabe, R., Bourvier P., Bouras, C. (1991) *Neuropathological observations in a case of autism presenting with self-injury behaviour*. Acta Neuropathol. 82 (4), 321-326.
- ▶ Newell, K.M., Challis, J.H.; Boros, R.L.; Bodfish, J.W. *Further evidence on the dynamics of self-injurious behaviours: Impact forces and limb motions*. American Journal of Mental Retardation. 107, 60-68.
- ▶ Rose, S. C., Weber, K. D., Collen, J. B., & Heyer, G. L. (2015). The diagnosis and management of concussion in children and adolescents. *Pediatric neurology*, 53(2), 108-118.
- ▶ Summers, J., Shahrami, A., Cali, S., D'Mello, C., Kako, M., Palikucina-Reljin, A., Savage, M., Shaw, O., and Lunsy, Y. (2017). Self-Injury in Autism Spectrum Disorder and Intellectual Disability: Exploring the Role of Reactivity to Pain and Sensory Input. *Brain Sciences*. 7, 140.

Questions & Comments

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