

Breaking The Silence: Pediatric Mental Health Post-Pandemic

Presented by:
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Declaration of Financial Interests

I have no financial conflicts or relationships to declare.

A Bit About Me...

- I have been working with kids, teens and families on improving their health and building positive habits for life
- I do clinical & academic teaching at the Canadian College of Naturopathic Medicine
- Passionate about supporting mental health in youth as I have lived experience of this challenge

Objectives: What We'll Be Covering

- 1) Overview of the stats on the impact of the pandemic on mental health
- 2) Review evidence in support of conventional treatment
- 3) Evidence for naturopathic approaches to mental health in children and teens
- 4) How to help build mental health resilience

Liat

8-year-old cis-girl with anxiety

- Constant anxiety as well as anger outbursts at school & home
- Father died of opiate overdose 14 months ago, at end of pandemic
- Lives with mother (& mom's boyfriend) and younger sister
- Trouble with falling asleep most nights

Dean

15-year-old gender fluid male with OCD

- Had mild anxiety before the pandemic, but anxiety intensified over pandemic
- Enjoyed virtual learning because was being bullied at school for gender identity
- Now engages in repeated counting (light switches, turning on/off oven, towels in bathroom, etc) and developed intense fear of dirt/ being near plants

How has the Pandemic and Lockdown Affected Youth Mental Health?



Impact of Pandemic

2021 meta-analysis published in JAMA Pediatrics found:

- Anxiety clinically affects 1 in 5 teens
- Depression affects 1 in 4 teens

These estimates are DOUBLE from those pre-pandemic

PMID: 34369987

Impact of the Pandemic on Ontario Youth

- Almost 40% of youth respondents said that mental health had worsened during pandemic
- After the first 12 months of the pandemic, visits to Toronto emergency departments related to self-harm among people less than 18 years old increased by 30% (!)

References: Toronto Population Health Profile (accessed September 19, 2023; published in 2023; Ontario Drug Use and Health Survey from 2022)

Which Kids Are Most Affected?

- 2022 systematic review looked at which sub-groups of children and teens were most negatively affected by pandemic. This is what they found:

Older teens, young kids, females, neuro-diverse and/or living with chronic physical conditions

PMID: 34455683;34174475

More Evidence...

- 2021 global cross-sectional study confirmed:
- 70% of respondents reported feeling more than moderate stress
- 59% had clinically significant symptoms of anxiety
- 39% had symptoms of moderate depression

PMID:33373680

More Risk Factors...

- Risk factors for poorer mental health:
 - **Prior mental health diagnosis**
 - **Lower ratings of mental resilience**
 - **Poor sleep**
 - **Younger age at onset of pandemic**
 - **Higher perceived level of loneliness**

PMID:33373680

But What Produces Better Outcomes for Kids?

- Factors associated with better mental health outcomes:
 - Increased physical activity
 - Positive relationships with family
 - Increased social supports
 - Access to entertainment

PMID: 34455683

Climate Crisis Impacts Children' Mental Health

- Although this research is in its infancy, awareness of climate crisis correlated with increased worry and anxiety of children/teens
- Studies to date done in North America and Europe although societies in south and far north more affected by climate crisis

PMID: 34873823

Eco-Anxiety: Parental Role

- When parents acknowledge eco concerns, their children display more adaptive responses to their own anxiety about the climate crisis
- Recent 2023 qualitative study from Quebec

PMID: 37079612

Loneliness ...Connection



Loneliness & Social Isolation

- US Surgeon General released a report earlier in 2023 stating that social isolation was equivalent in negative impact to mental and physical as smoking 15 cigarettes per day

(<https://www.hhs.gov/sites/default/files/surgeon-general-social-connection-advisory.pdf>)

Loneliness & Social Isolation

- 2022 systematic review confirmed that social isolation exacerbates pre-existing mental health conditions in children and teens such as anxiety and depression

PMID: 34529837

Long-Term Impacts of Loneliness

- Even before COVID pandemic, the negative impact of loneliness on kids and teens' mental health shown to be long-lasting
- UP TO 9 years!

PMID: 32504808

Social Media Use & Self-Esteem

- 2022 qualitative study of 427 medical students in Romania found that use of SnapChat was correlated with improved body image & self-esteem whereas TikTok was correlated with lower self-esteem and increased concern about body image

PMID:35564458



Conventional Treatment of Pediatric Mental Health

Benefits and Risks

SSRI of Choice in the Pediatric Population

- Fluoxetine, an SSRI, is the most recommended medication for pediatric depression and anxiety
- Fluoxetine is one of first SSRI with long history of use in adults and pediatric population
- PMID: 19723787;34728290

The OG: TADS

- TADS (Treatment for Adolescents with Depression Study) in early 2000s set up parameters for pharmaceutical treatment of depression in teens
- Many findings, but overall found that CBT + SSRIs produced most improvement, better than either CBT or meds alone
- PMID: 19723787;34728290

SSRIs and Suicidality

- TADS found that suicidality increased slightly above placebo in the short-term <12 weeks of onset of treatment
- Longer-term follow-up confirmed that increased in suicidality was only increased in the med-only group
- PMID: 17909125

Medications and Teen Anxiety

- 2015 systematic review found that SSRIs alone such as fluoxetine improve anxiety scores without increasing suicidal thoughts and actions
- PMID:2549861

New Meds, Better Outcomes?

- Fluoxetine is the most recommended medication for pediatric depression and anxiety
- 2021 meta-analysis did not find more recent antidepressants such as venlafaxine, escitalopram, mirtazapine, vilazodone or vortioxetine seemed safe to use but were not more effective than traditional SSRIs
- PMID:34029378

Is Serotonin Really At Play?

- Moncrieff et al. published a systematic ‘umbrella’ review which argued that there is no compelling evidence that serotonin deficiency is correlated with depression
- PMID: 35854107; 36356194

Is Serotonin Really At Play?

- Clear that depression and anxiety have multiple contributing causes such as involvement of dopamine, noradrenaline, tryptophan metabolism, CNS inflammation and imbalances in gut microbiome
- PMID: 35854107; 36356194

Treatment of ADHD

- CBT (Cognitive behavioural therapy) and parenting strategies are first-line approaches to treating ADHD in young (7yo) children
- Medications such as methylphenidate and atomoxetine are first-line add-ons for older children, teens and adults
- PMID: 31658722; 16796929

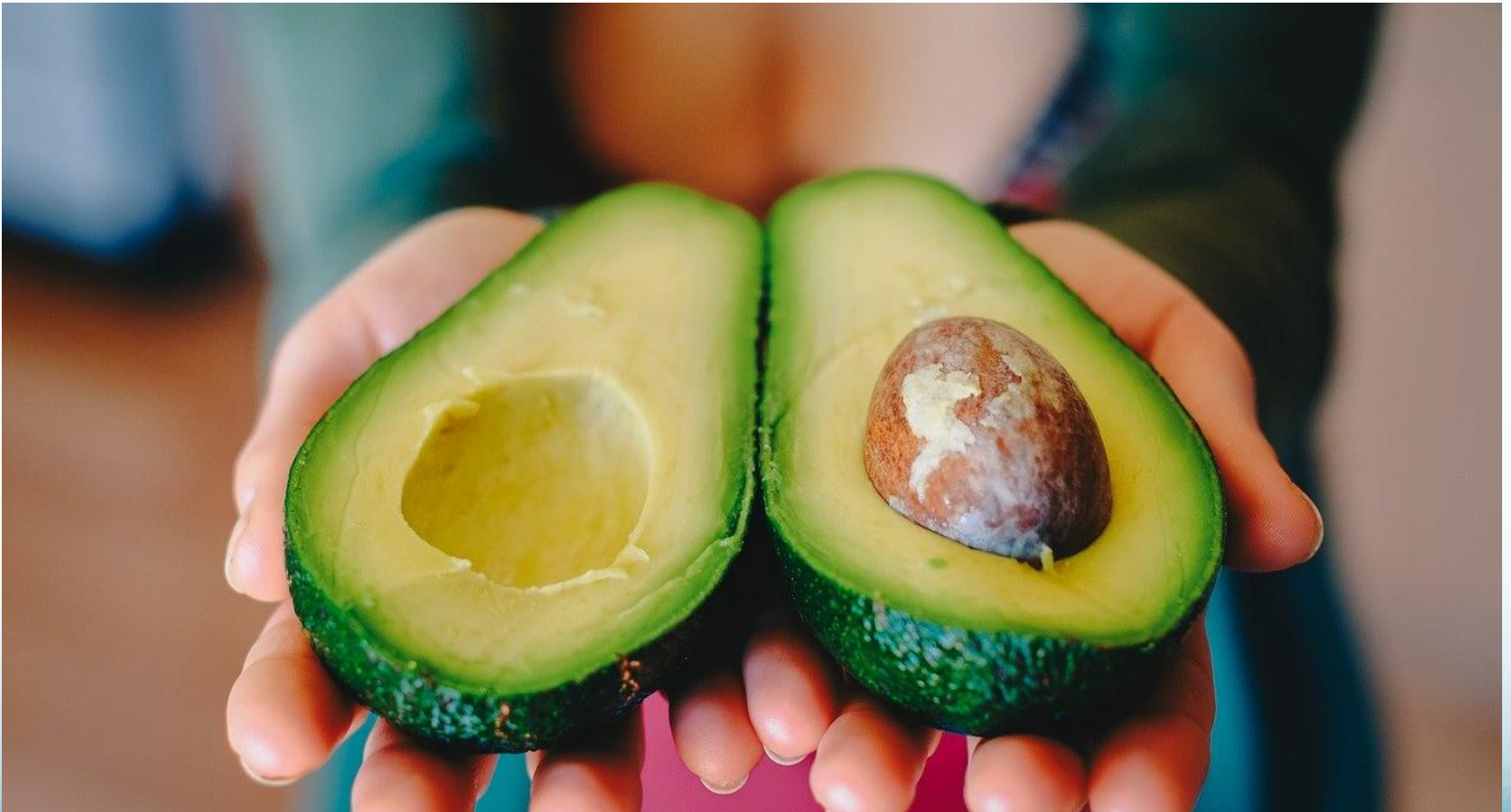
Long-acting vs Short-Acting ADHD Medications

- 2015 meta-analysis showed that there was no significant difference in therapeutic effect of short-acting vs long-acting methylphenidate formulations
- PMID: 26302778

Challenge with ADHD Medications

- Often challenging to get to therapeutic dose without experiencing significant adverse effects such as:
 - Anorexia
 - Insomnia

Foundation of Mental Health Healthy Lifestyle



The List of Lists: Evidence for Natural Interventions

- Not specific to children, 2022 meta-analysis found Grade A evidence for use of:
 - **Adjunctive use of Omega-3 fatty acids, zinc, Vitamin D, methylfolate, SAMe and probiotics for depression**
- PMID: 35311615 (co-written by Cdn Network for Mood and Anxiety Disorders taskforce members)

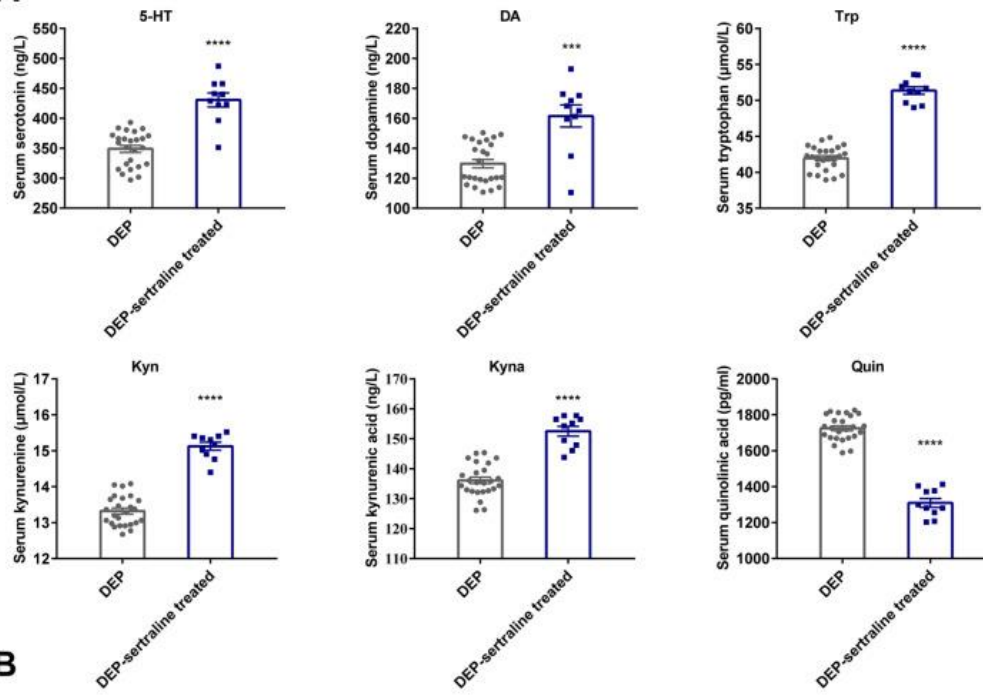
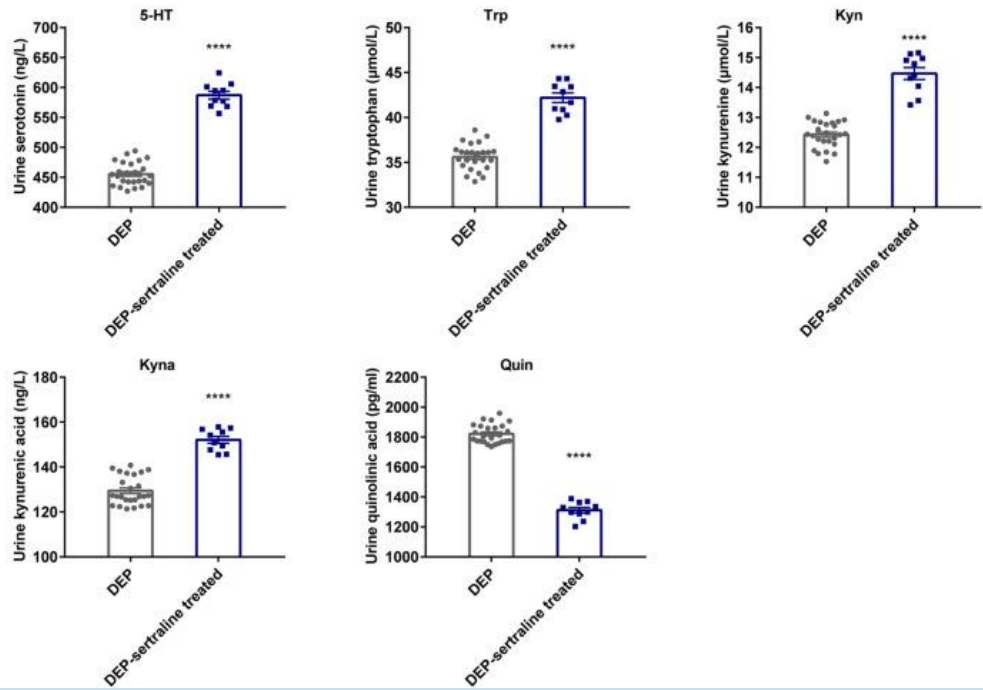
The List of Lists: Evidence for Natural Interventions

- Weak link between OCD and supplemental NAC
- No other nutraceuticals with Grade A evidence for anxiety disorders
- PMID: 35311615 (co-written by Cdn Network for Mood and Anxiety Disorders taskforce members)

Healthy Gut, Healthy Mind

- 2023 study involving both teens and mice (?!) compared bacterial species in untreated, depressed teens and sertraline-treated teens
- Rosaburia, anaerobic bacteria in Firmicutes group, was found to be predictive of depression
- Lower levels of Rosaburia found more frequently in the GI tracts of depressed teens

- PMID: 37386523

A**B**

Healthy Gut, Healthy Mind

- Further, found that depressive behaviours in mice improved after fecal transplant from non-depressed mice
- PMID: 37386523

Healthy Gut, Healthy Mind

- Rosaburia has anti-inflammatory effects, produces butyrate, increases gut motility, increases 5-HT, & suppresses toxins from IDO pathway
- Low levels of Rosaburia correlated with many medical conditions such as NIDDM, IBS, nervous system dysregulation
- PMID: 28139139

Healthy Gut, Healthy Mind

- IDO (Indoleamine-2,3-dioxygenase) pathway when activated, depletes brain of Tryptophan, a precursor to serotonin
- ALSO increases inflammation as well as oxidative stress and increasing glutamate in brain
- Proper levels of iron, magnesium, folate and other B vitamins are essential for proper functioning of this pathway
- PMID: 14719046

Diets & the Evidence

- COMPASS study in Canada published findings in 2023:
- Followed almost 25 000 high school students for a year through surveys of 12 lifestyle habits as well as GAD-7 and CESD scores
- 12 lifestyle factors incl: sleep, screen time, veg and fruit intake, whole grain intake; cannabis use
- PMID:37069643

Diets & the Evidence

- Low adherence to dietary recommendations BUT when they were followed, those students had lower anxiety and depression scores
- Also, screen time and sleep quality/duration important
- PMID: 37069643

Mediterranean Diets

- Several studies link Mediterranean diets and lower incidence of depression in adolescents
- PMID:33416032; 36297074

Omega 3 Fatty Acids & Mood

- Recommendations from the Intl Society of Nutritional Psychiatric Research:

For MDD

- EPA+DHA 1000-2000mg/d with EPA:DHA ratio of 2:1 for 12-16 weeks
- PMID:33124582;31480057

Omega 3 Fatty Acids & Mood

For ADHD

- EPA+DHA 750-1200mg/d for 16-24 weeks
- PMID:33124582;31480057 (again, Intl Society of Nut Psych Research)

Vitamin D & Mood

- Well-established that youth with lowest levels of Vitamin D were most likely to have clinical depression
- Effect of Vitamin D supplementation on depressive symptoms across all ages is less clear
- PMID: 28176022

RCT on Vitamin D in Teens

- 2020 small (N=280) RCT comparing Vitamin D-supplemented group (daily dose=2640IU) to placebo
- Change in Vitamin D status over 28 days of trial in treated group but no difference in BDI-II scores between groups
- Parental ratings of their children's depression did improve in treated group
- PMID:32108263

B Vitamins & Adolescent Depression

- Low B12 + high homocysteine levels (as well as low Vit D3) associated with teen depression in small study involving hospitalized teens compared to controls
- Low serum folate (as well as DHA & AA) levels correlated with depression in a small group (26 or so) of Japanese female teens
- PMID: 32304285;25466229

Movement Medicine



Effect of Pandemic on Movement in Kids

- 2021 review confirmed that levels of exercise decreased during covid-19 pandemic
- Exercise improves mental health outcomes over all ages
- PMID: 33775993

Exercise & Psychological Well-Being

- Pre-pandemic 2019 meta-analysis looking at 18 intervention studies, found a link between low level of physical activity and poor psychological well-being in youth (eg.depression, stress, low self-esteem, etc)
- Effect found in adolescents but not younger children
- PMID: 30993594

Movement and Mental Health in Pandemic

- 2021 Japanese review revealed that older children with lowest level of physical activity in pandemic were most likely to have poor psychological health
- PMID: 33775993

Movement and Mental Health in Pandemic

- 2021 cross-sectional Chinese study found that students who exercised less than 30 minutes per day were more likely to suffer psychological distress than students who moved at least more than 1 hour per day
- PMID: 33496797

Screen Time in Pandemic & Physical Activity

- In small Dutch study (n=102) looked at different measures of screen time and sedentary time
- Screen time overall increased by 34+/-105 min per day
- Sedentary time increased to 45+/-67 min per day
- 64% of kids in study met the 60 min/d goal whereas only 20% did so during pandemic
- PMID: 33623443

Screen Time and the Pandemic



Screen/Sedentary Time in Pandemic

- 2021 British study found that screen/sedentary time increased most in youth under age 18 years old
- Increased 159+/-142 minutes per day and over half of sedentary time was screen time
- This increase associated with decreased global mental health, depression and anxiety in kids
- PMID: 34769800

Screen Time & Mental Health in Children

- 2021 longitudinal cohort study by HSC found that:
- More screen time resulted in higher incidence of depression, anxiety and inattention especially in older male children
- PMID: 34962557

Sleep/Rest



Impact of Pandemic on Sleep?

- 2021 meta-analysis looked at sleep patterns pre- and post-pandemic for children and teens:
- Sleep guidelines not met in 49% of children and youth in the pandemic
- Interestingly, trend (non-significant) of pre-school children have improved sleep duration during pandemic confinement
- PMID: 34182354

Sleep & Depression in Teens

Even with similar sleep hygiene routines, teens with depression had shorter sleep duration and poorer quality sleep than teens without mood disorder

- PMID:31376799

Sleep and Gender Differences

Chronic sleep deprivation seems to affect the moods of female teens more than males

- PMID: 29890964



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Mental Health Resilience

Pre-pandemic 2018 systematic review shows that:

Resilience-enhancing programs correlated with increased ability to handle daily stressors

BUT long-term effects have not been studied...

PMID: 29976252

Mental Health Resilience

Again, pre-pandemic, 2017 systematic review showed that universal school-based programs reduce depression and anxiety symptoms at least in the short-term, especially when including a CBT component

PMID:28942803

Exercise and Resilience

- Increasing levels of physical activity associated with better mental health resilience in middle-school children

- PMID: 25898349

Martial-Arts and Resilience

- 10-week martial arts training program improved mental resilience in children aged 12-14 compared to waiting-list control
- PMID: 33990939

Team Sports and Resilience

- In teens affected by ACEs (adverse childhood experiences), playing team sports correlated with better mental health in adolescence and adulthood
- PMID: 31135890

Parents' Role in Resilience

- Evidence from different parts of the world, specifically Hong Kong and Italy, confirmed that parental well-being was correlated with positive mental health in their children
- PMID: 33182661;33205284

Back to Liat

- 8-year-old with anxiety and anger outbursts

Initial tx:

- Lower processed/sugar foods in diet
- Omega-3 fa's (2000mg DHA+EPA) plus 25mg zinc
- Homeopathic remedy: Lac-caninum 200
- CONNECTION!

Follow Up with Liat

- 4 weeks after initial treatment, Liat said that she felt more relaxed and was sleeping better
- Her mother also has noticed that her anger outbursts happened only once per week at most
- The family is spending more time together in nature, going on long walks

Back to Dean

- 15-year-old with anxiety and OCD

Initial tx:

- Combination of GABA (300mg) + 150mg L-theanine as well as Curcumin (120mg) per day
- Homeopathic remedy: Ars-album 200
- CONNECTION (plus referral to community mental health agency)!

Follow Up with Dean

- 5 weeks after the initial visit, Dean is still doing the counting, but fear of dirt and plants has lessened considerably (he does not recall having that fear when I ask)
- Mother notices that Dean is expressing anger & frustration more often; healthy expression
- Dean is spending more time with his friends since he is less concerned with dirt and germs

Resources

Canadian Pediatric Society

www.cps.ca

**Provides several useful position papers on variety of topics related to children's health

Preventing Youth Suicide: a guide for practitioners

www2.gov.bc.ca

Resources

- Resilience Guide for Parents and Teachers

www.apa.org

Growing Up Resilient—Ways to Build Resilience in
Children and Youth

www.camh.ca

How to Get in Touch with Me

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