Understanding Relationships between Perinatal and Intergenerational Exposures, and Child Maltreatment Outcomes

Presented by: Dr Claudia Bull

Collaborators: Professor Steve Kisely, Dr Mike Trott, Emeritus Professor Jake M Najman, Dr Natasha Reid

Acknowledgement of Country

The University of Queensland (UQ) acknowledges the Traditional Owners and their custodianship of the lands on which we meet.

We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country.

We recognise their valuable contributions to Australian and global society.

The Brisbane River pattern from *A Guidance Through Time*
by Casey Coolwell and Kyra Mancktelow.

Presentation overview

Child maltreatment: An overview

- **Child maltreatment (CM) is a collective term that comprises:**
  - Physical abuse
  - Emotional abuse
  - Sexual abuse
  - Neglect (both physical and emotional)
  - Domestic and Family Violence

- **World Vision Australia estimates that CM affects >1.7 billion children <18 years old each year**[1]
- **WHO estimates that 75% of children aged between 2-4 years old are physically or emotionally abused by their parents or carers**[2]

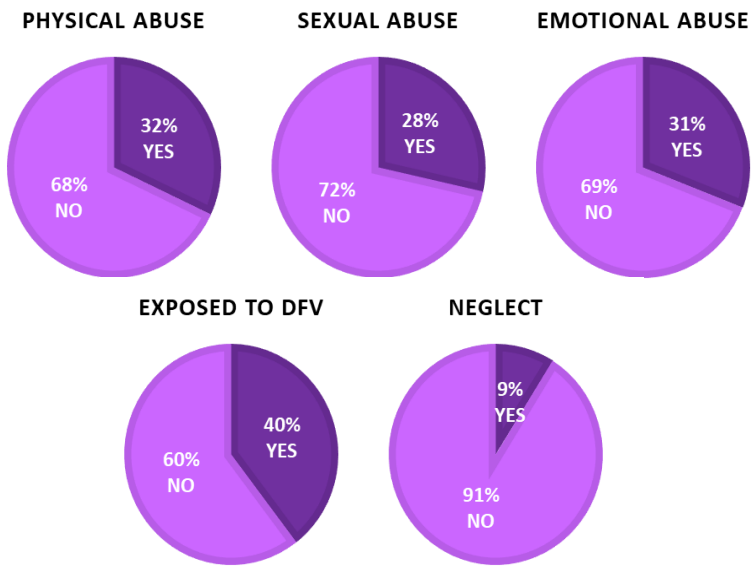
Child maltreatment: An overview

Before the age of 18 in Australia[3]:

- 1 in 3 (32%) children will have experienced **physical abuse**
- 1 in 4 (28.5%) children will have experienced **sexual abuse**
- 3 in 10 (30.9%) children will have experienced **emotional abuse**
- 4 in 10 (39.6%) children will have experienced **domestic and family violence**
- 1 in 10 (8.9%) children will have experienced **neglect**

Estimates differ depending on the data source though:

- 7.9 per 1,000 children aged 0-18 had at least one substantiated Child Protection notification in 2022-23[4]
  - 57% of notifications were for **emotional abuse**
  - 21% of notifications were for **neglect**
  - 13% of notifications were for **physical abuse**
  - 9% of notifications were for **sexual abuse**



Findings from the 2023 Australian Child Maltreatment Study (ACMS)

Established risk factors for CM

Established risk factors for CM[5-8]	Ambiguous risk factors for CM[8]
Maternal history of experiencing CM	Perinatal complications
Parental mental illness	Prenatal smoking and/ or alcohol consumption
Substance use disorders	Parental social isolation
Violent interpersonal relationships	Low household income/ socioeconomic stress
	Maternal attitudes towards pregnancy (e.g., whether the child was planned)

Established consequences of CM

- CM can lead to a *toxic stress response* → impaired brain development by altering the brain's structure, function, connectivity, and neural networks[9]
- Whole host of short- and long-term health and social consequences for children[10-25]
- Intergenerational transmission of child abuse and neglect[26-28]
- In combination with violence against women, CM costs the Australian tax-payer AU$26 billion dollars annually[29]

Two studies, two aims, one overlapping story

Study 1: Risk factors associated with child maltreatment in the second generation of a prospective longitudinal Australian birth cohort: A MUSP study

Aim: To examine the extent to which a wide range of sociodemographic, prenatal, and postpartum risk factors were associated with CM notifications in an Australian birth cohort.

Study 2: Associations between child maltreatment and hospital admissions for alcohol and other substance use-related disorders up to 40 years of age: Results from the Childhood Adversity and Lifetime Morbidity (CALM) study

Aim: To examine associations between CM notifications and inpatient admissions for alcohol use disorders (AUDs) and substance use disorders (SUDs) up to 40-years of age.

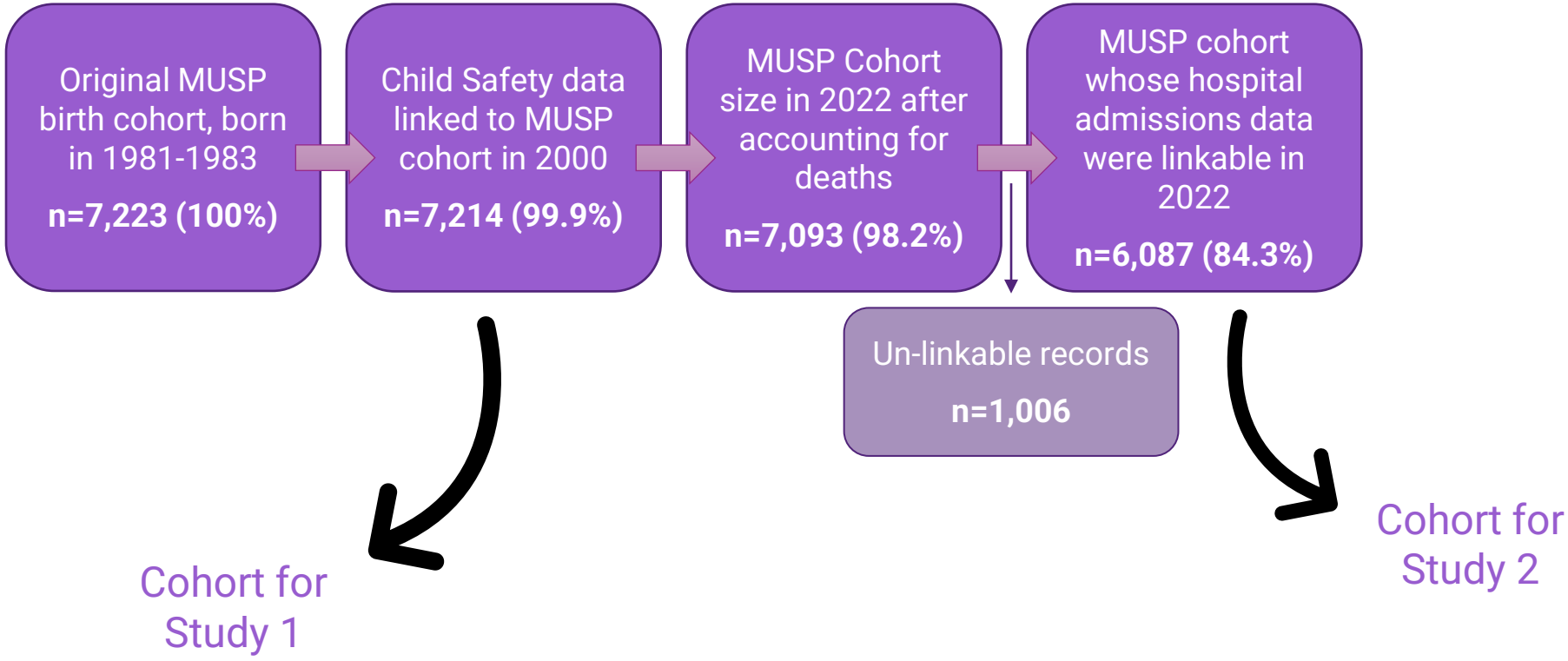
QR code: Study 1

QR code: Study 2

The MUSP cohort

- The Mater-University of Queensland Study of Pregnancy (MUSP) is a prospective longitudinal birth cohort study
- Recruited n=6,753 women (Generation 1) and their n=7,223 babies (Generation 2) born at the Mater Hospital (Brisbane) between 1981-83
- Both generations have been followed-up over the years, including 6-month, 5-years, 14-years, 21-years, 28-years (Generation 1 only), 30-years (Generation 2 only), and 40-years (Generation 2 only)
- In 2000, Child Protection data was linked for Generation 2 from the time they were 0-15 years old
  - **CM agency-reported notifications:** contact made to an authorised department by people or other bodies alleging child abuse or neglect, child maltreatment, or harm to a child
  - **CM substantiations:** notifications where an investigation concluded there was reasonable cause to believe the child had been, was being, or was likely to be, abused, neglected or otherwise harmed
- In 2022, Queensland-wide administrative health data were linked for Generation 2 from the time they were 25-40 years old
  - Admitted Patient Data
  - Emergency Department Data
  - Community Mental Health Data

The MUSP cohort



Study 1:

Risk factors associated with child maltreatment in the second generation of a prospective longitudinal Australian birth cohort: A MUSP study

Study 1: Risk factors for CM based on MUSP

Sociodemographic risk factors examined (n=6)	Prenatal risk factors examined (n=13)	Postnatal risk factors examined (n=9)
• Child was born female • Mother did not finish high school • Combined parental income at birth was below the median Australian household income level in 1981 (<AU$10,400) • At least one parent identified as First Nations Australian • Parents were not living together when the child was born • Child was born into a large family	• Mother experienced a young pregnancy (<20 years old) • Mother attended her first antenatal appointment late (≥17-weeks' gestation) • Mother smoked • Mother consumed ≥1 standard drink/day • Mother used cannabis in late pregnancy • Mother engaged in binge drinking at any point during pregnancy • Mother reported depression, anxiety, or stress during the prenatal period (modelled separately) • Mother experienced a significant life event (e.g., family death, personal health problems, divorce etc.) in the 6-months before birth • Mother reported conflict with their partner during the prenatal period • Mother reported negative feelings about becoming pregnant • The baby was unplanned • Mother perceived pregnancy to be hard • Mother experienced problems during labour and delivery (e.g., severe pain during labour, induction, episiotomy etc.)	• Child was admitted to the neonatal intensive care unit (NICU) postpartum • Child had medical problems postpartum (e.g., medical problems, required admission to special care nursing [SCN], feeding problems etc.) • Mother did not want contact with the child once born • Mother did not feel positive about caring for the baby • Baby was not breastfed • Mother reported depression, anxiety, or stress in the postpartum period (modelled separately) • Mother reported conflict with their partner during the postpartum period • Mother was socially isolated in the 3-5 days postpartum • Mother or father were ever arrested for any offence up to 5-years postpartum

**All risk factors were dichotomised for modelling

Study 1: Risk factors for CM based on MUSP

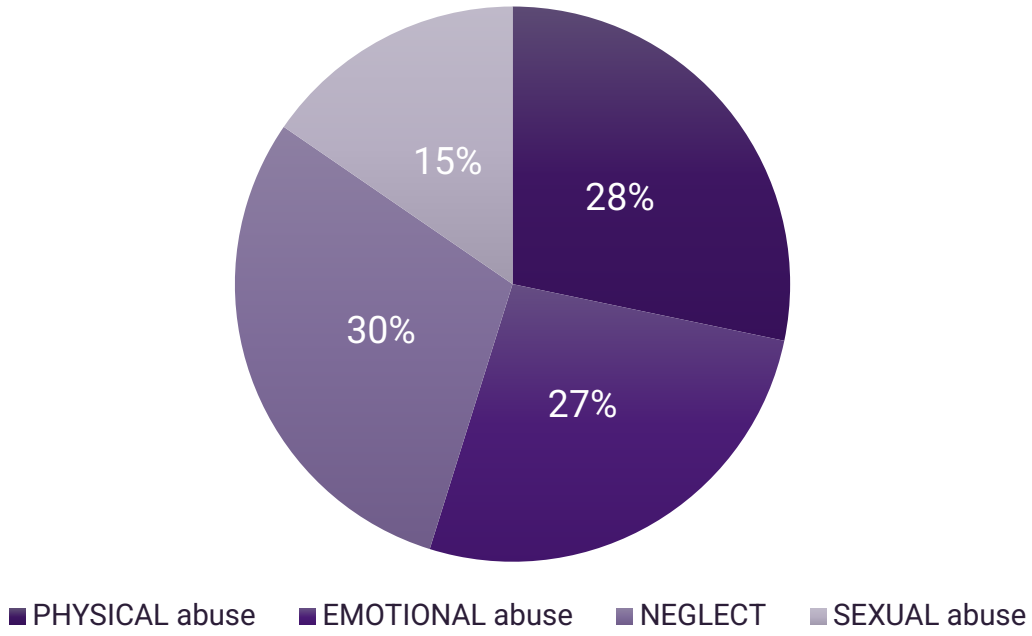
- **Outcomes examined**
  - Agency-reported CM notifications (<16 years)
    - Physical abuse
    - Emotional abuse
    - Sexual abuse
    - Neglect
  - Substantiated CM notifications (<16 years)
    - Physical abuse
    - Emotional abuse
    - Sexual abuse
    - Neglect

We modelled the odds of these outcomes relative to risk factors (unadjusted and adjusted)
AND
The extent to which significant risk factors could predict specific CM outcomes.

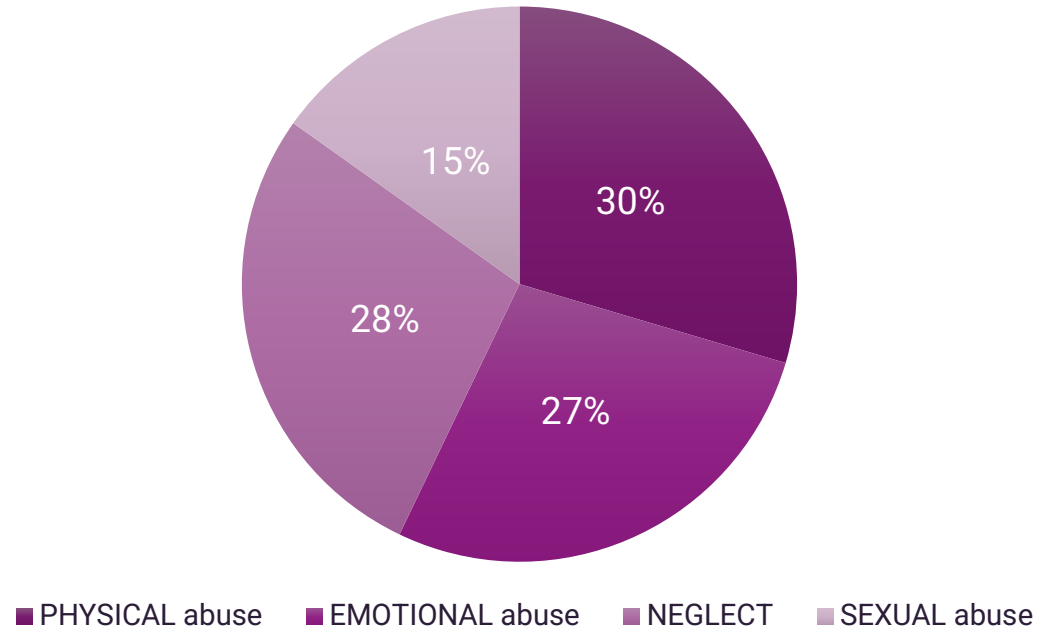
**All outcomes were dichotomised as 'never' vs 'ever' for modelling

Proportion of MUSP Generation 2 cohort who had notifications for CM (n=7,223)

Agency-reported CM notifications (n=789, 10.9%)



Substantiated CM notifications (n=511, 7.1%)



Risk factors significantly associated with Agency-reported CM notifications

	Adjusted Odds (95%CI)[a]
Sociodemographic risk factors	
Mother did not finish high school	1·76 (1·48-2·10)**
Combined parental income at birth below median Australian household income level	1·36 (1·15-1·60)*
Parents not living together at birth	1·48 (1·20-1·82)*
Large family size based on parity ≥3 children	1·73 (1·38-2·16)**
Prenatal risk factors	
Young pregnancy (<20 years old)	1·90 (1·55-2·32)**
Mother smoked in late pregnancy	1·67 (1·42-1·96)**
Postpartum risk factors	
Mother was socially isolated in the 3-5 days postpartum	1·56 (1·24-1·96)**
Father was arrested for any offence up to 5-years postpartum	1·40 (1·16-1·68)*

These results reflect risk factors for overall agency-reported CM notifications. More info about specific CM subtypes can be found in the published article.

*p-value<0·0015, **p-value<0·0001; [a]Adjusted for 24 variables that were significant in unadjusted analysis + child's sex

Risk factors significantly associated with Substantiated CM notifications

	Adjusted Odds (95%CI)[a]
Sociodemographic risk factors	
Mother did not finish high school	1·88 (1·53-2·31)**
Combined parental income at birth below median Australian household income level[b]	1·44 (1·19-1·76)*
Parents not living together at birth	1·52 (1·18-1·95)*
Large family size based on parity ≥3 children	1·86 (1·43-2·42)**
Prenatal risk factors	
Young pregnancy (<20 years old)	2·01 (1·58-2·56)**
Mother smoked in late pregnancy	1·65 (1·36-2·00)**
Postpartum risk factors	
Baby admitted to NICU postpartum	1·75 (1·30-2·36)*
Mother was socially isolated in the 3-5 days postpartum	1·96 (1·51-2·54)**

These results reflect risk factors for overall substantiated CM notifications. More info about specific CM subtypes can be found in the published article.

*p-value<0·0015, **p-value<0·0001; [a]Adjusted for 21 variables that were significant in unadjusted analysis + child's sex

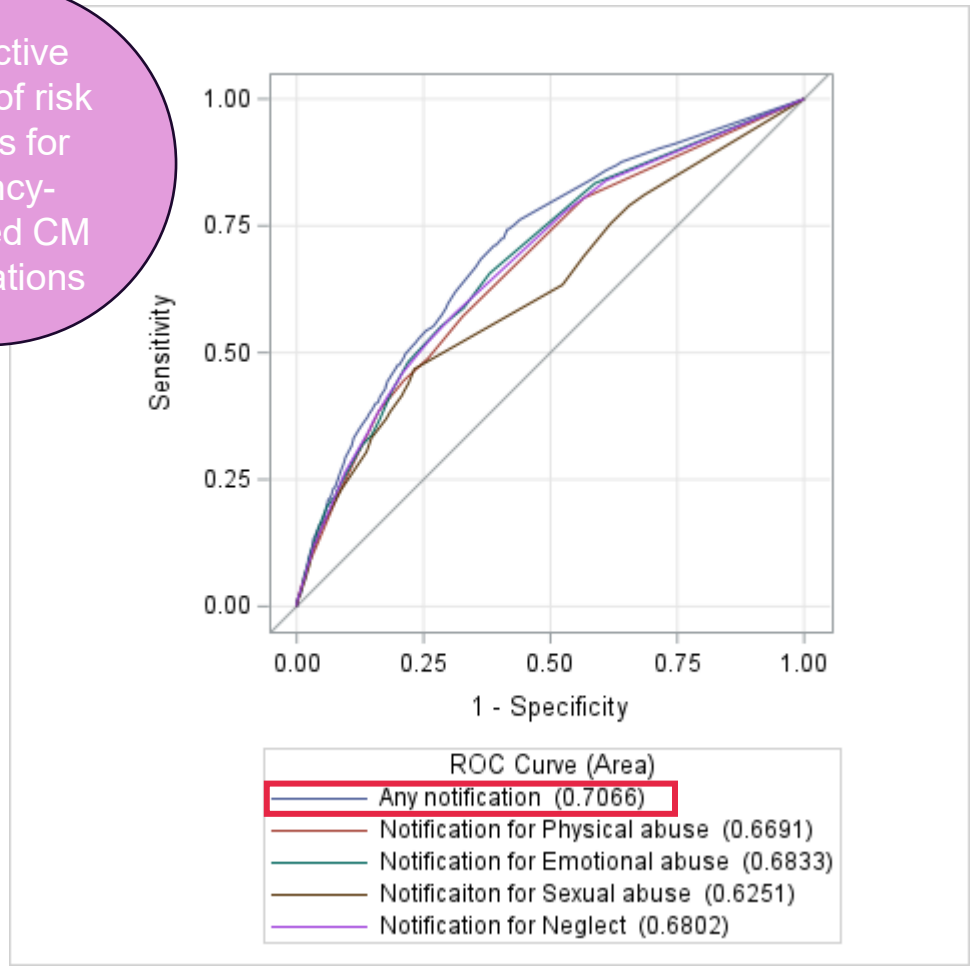
Noteworthy risk factors that WERE NOT significantly associated with Agency-reported or Substantiated CM notifications

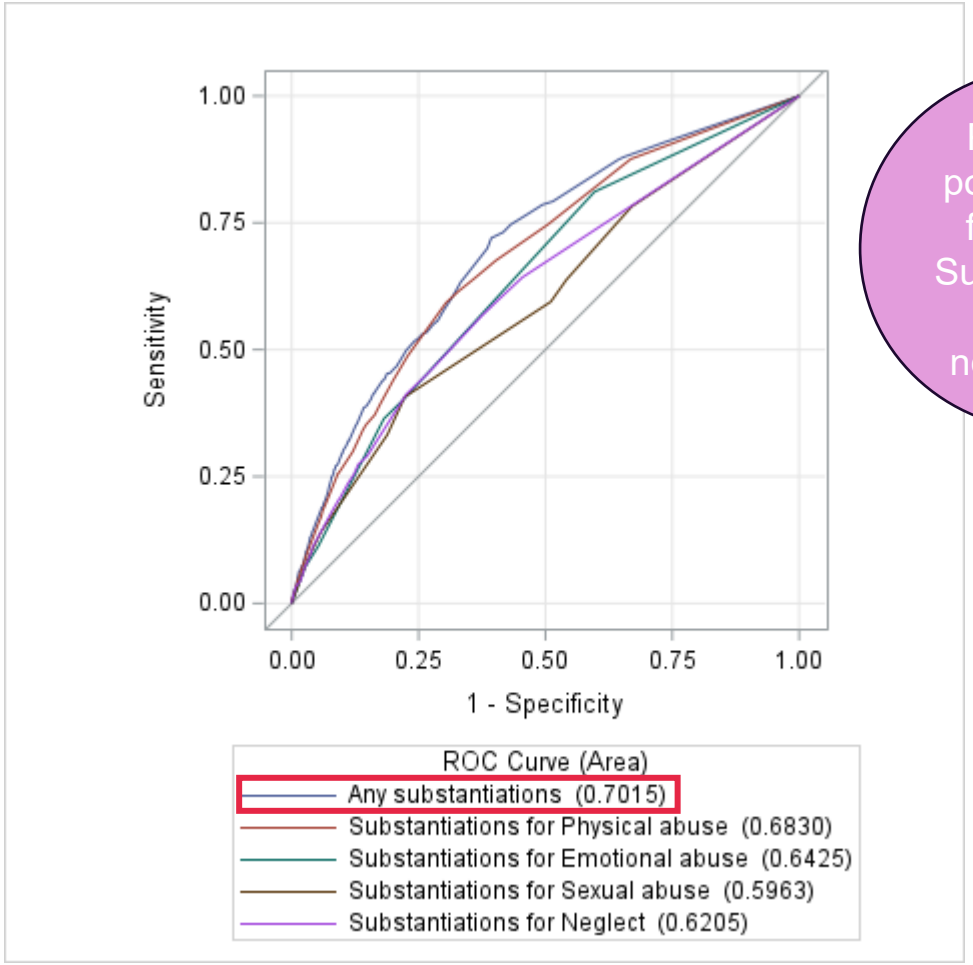
- At least one parent identified as First Nations Australian
- Mother consumed ≥1 standard drink/day in late pregnancy
- Mother engaged in binge drinking at any point during pregnancy
- Mother used cannabis in late pregnancy
- Mother reported depression, anxiety or stress during the prenatal and postnatal periods
- Baby was not planned
- Mother did not want contact with baby once born and did not feel positive about caring for the baby
- Baby was not breastfed
- Mother was arrested for any offence up to 5-years postpartum

Some of these non-associated risk factors debunk established beliefs around what can lead to CM.

The predictive power of these risk factors was only "fair"

Predictive power of risk factors for Agency-reported CM notifications





Predictive power of risk factors for Substantiated CM notifications

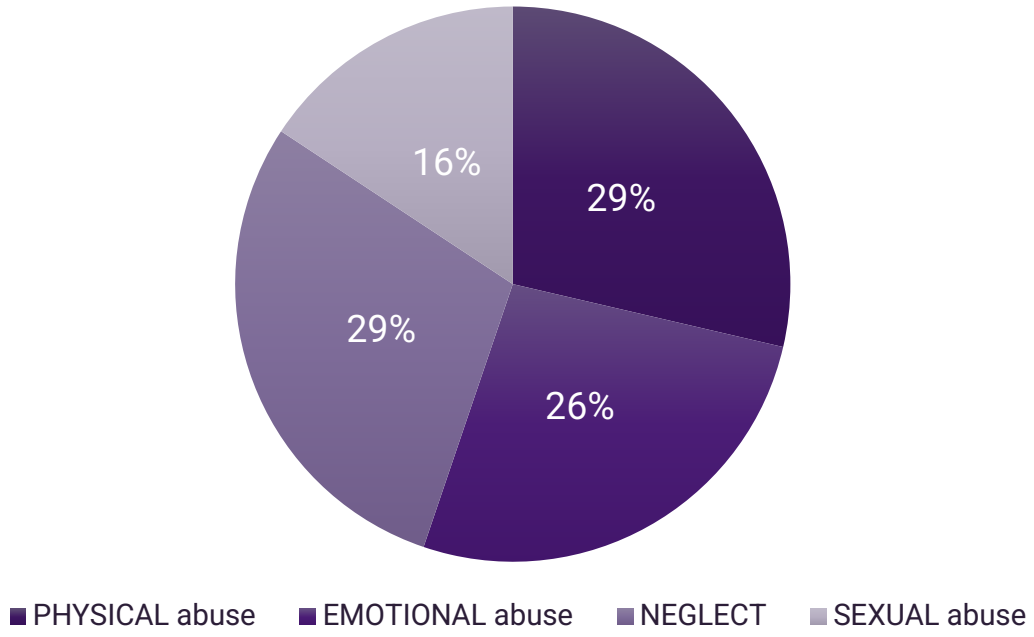
There are likely a host of other risk factors that contribute to CM notifications.

Study 2:

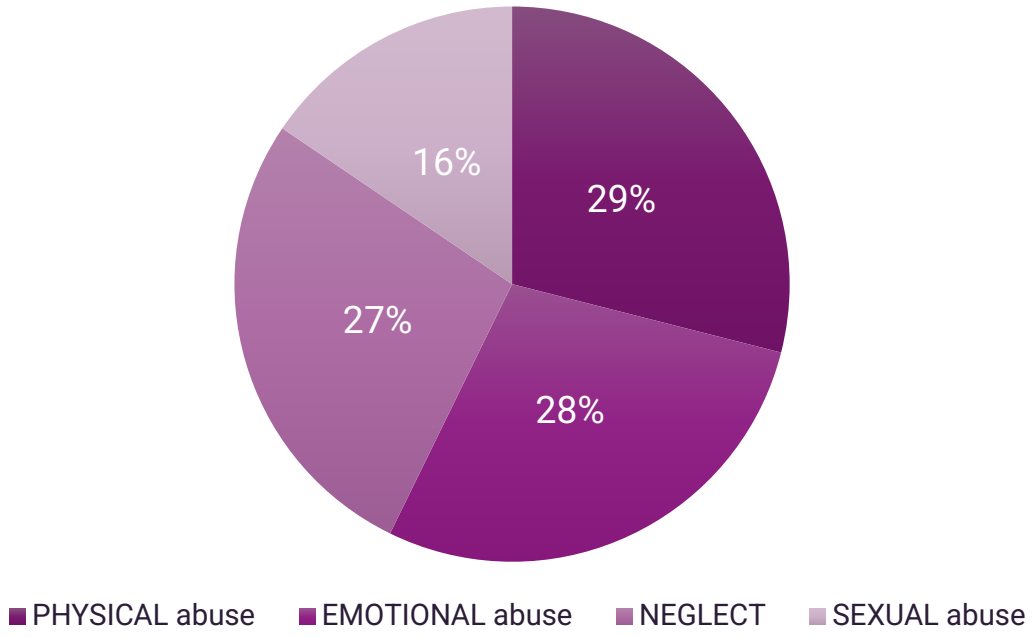
Associations between child maltreatment and hospital admissions for alcohol and other substance use-related disorders up to 40 years of age: Results from the Childhood Adversity and Lifetime Morbidity (CALM) study

Proportion of MUSP Generation 2 cohort who had notifications for Child Maltreatment (n=6,087)

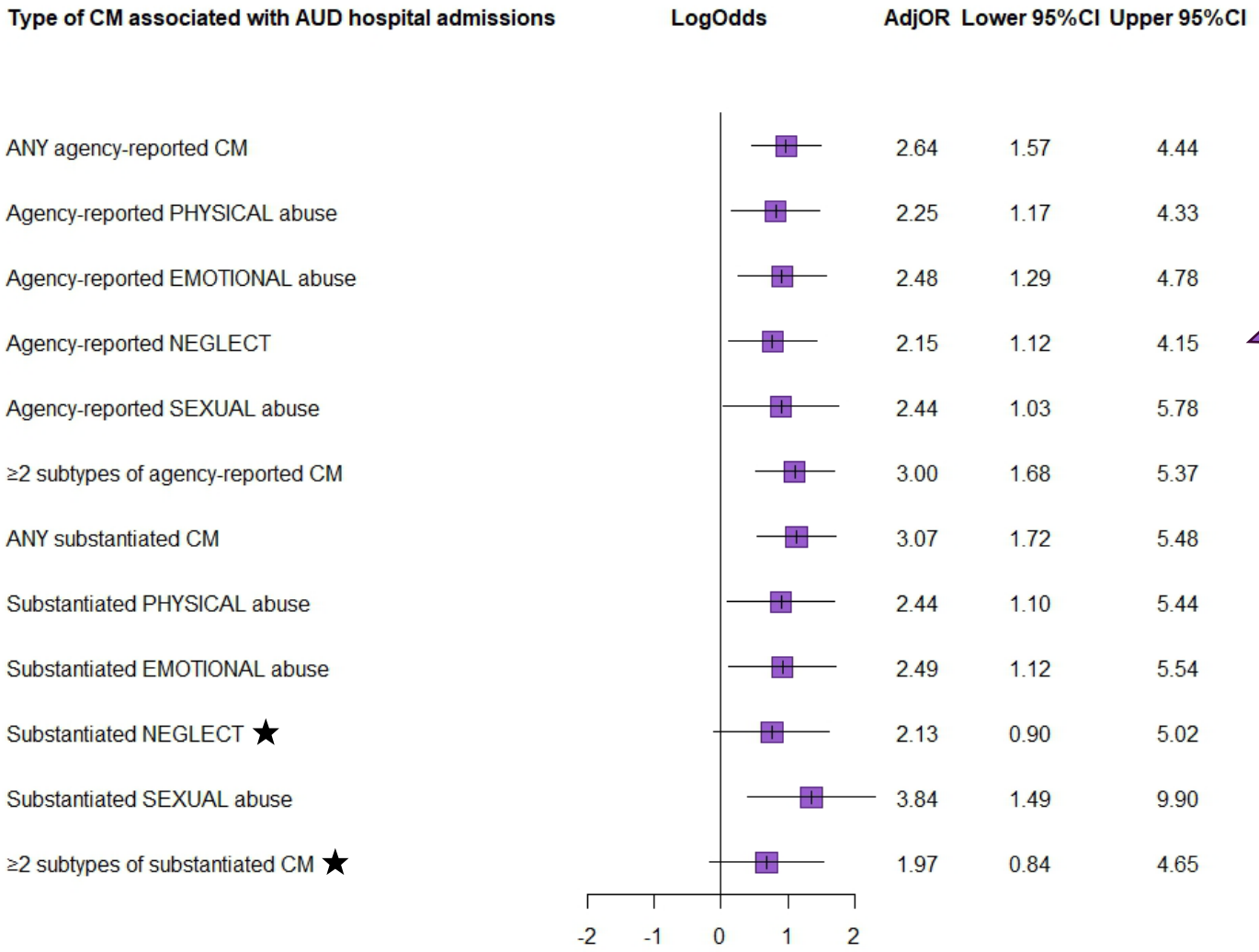
Agency-reported CM notifications (n=609, 10.0%)



Substantiated CM notifications (n=389, 6.4%)



CM experiences associated with hospitalisation for Alcohol Use Disorders (AUDs) in later life

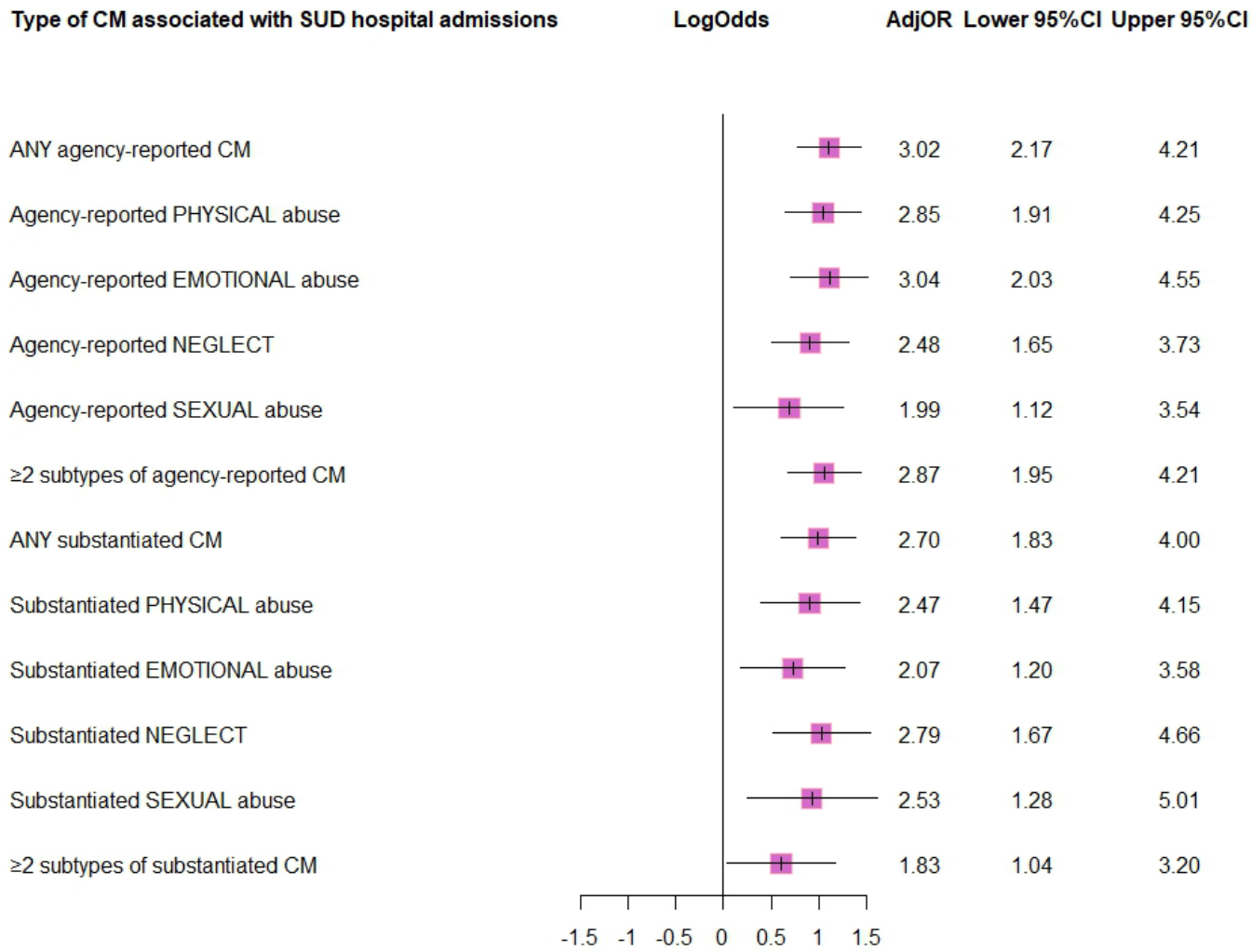


All types of Agency-reported and Substantiated CM notifications were significantly associated with AUD hospitalisations up to 40-years old.★

Models were adjusted for:

- Sex at birth
- At least one parent identified as First Nations
- Parents were not together at birth
- Family income at birth was below median
- Mother smoked cigarettes heavily before pregnancy and in late pregnancy
- Mother consumed cannabis use in late pregnancy
- Mother binge drank at any time during pregnancy

CM experiences associated with hospitalisation for Substance Use Disorders (SUDs) in later life



All types of Agency-reported and Substantiated CM notifications were significantly associated with SUD hospitalisations up to 40-years old.

Models were adjusted for:

- Sex at birth
- At least one parent identified as First Nations
- Parents were not together at birth
- Family income at birth was below median
- Mother smoked cigarettes heavily before pregnancy and in late pregnancy
- Mother consumed cannabis use in late pregnancy
- Mother binge drank at any time during pregnancy

Taken together – what does it all mean?

To prevent CM from occurring in the first place:

1. Push back on the rhetoric that First Nations people and parents with mental illness are more likely to maltreat their children
2. Address the complex social determinants of health that are genuine risk factors for CM e.g., education and household income
3. Help women to socially connect after birth to minimise social isolation and optimise support structures

CM can lead to significant health burden across the life course:

1. Invest in strategies to prevent CM and support early intervention – stop the intergenerational cycle 
2. Stop normalising alcohol consumption (and to a lesser extent, drug use) in Australia
3. Tailor AUD and SUD care and treatment to the individual, and use a trauma-informed approach[30-34]

Thank you

Dr Claudia Bull

UQ Profile: https://about.uq.edu.au/experts/41770

claudia.bull@uq.edu.au
+61 439 791 446

References

1. World Vision Australia. *Child abuse: Facts, Stories & FAQ's*. World Vision, 2020. Retrieved from: https://www.worldvision.com.au/child-abuse#:~:text=Child%20abuse%20facts%20and%20statistics,-Children%20make%20up&text=One%20quarter%20of%20all%20adults,age%20who%20die%20from%20homicide.
2. World Health Organization. *Child maltreatment*. WHO, 2022. Retrieved from: https://www.who.int/en/news-room/fact-sheets/detail/child-maltreatment.
3. Mathews B, Pacella RE, Scott JG, Finkelhor D, Meinck F, Higgins DJ, Erskine HE, Thomas HJ, Lawrence D, Haslam DM, Malacova E, Dunne MP. The prevalence of child maltreatment in Australia: findings from a national survey. Med J Aust 2023; 218 (6 Suppl): S13-S18. https://doi.org/10.5694/mja2.51873.
4. Australian Institute of Health and Welfare. *Child protection Australia2022-23*. AIHW, 2024. Retrieved from: https://www.aihw.gov.au/reports/child-protection/child-protection-australia-insights/contents/insights/the-process-of-determining-child-maltreatment
5. Ayers S, Bond R, Webb R, Miller P, Bateson K. Perinatal mental health and risk of child maltreatment: A systematic review and meta-analysis. Child Abuse Negl. 2019;98:104172.
6. Holdroyd I, Bywaters P, Duschinsky R, Drayak T, Taylor J, Coughlan B. Fathers' mental Ill-health and child maltreatment: A systematic review of the literature. Child Youth Serv Rev. 2024;157:107317.
7. Lotto CR, Altafim ERP, Linhares MBM. Maternal History of Childhood Adversities and Later Negative Parenting: A Systematic Review. Trauma Violence Abuse. 2023;24(2):662-83.
8. Younas F, Gutman LM. Parental Risk and Protective Factors in Child Maltreatment: A Systematic Review of the Evidence. Trauma Violence Abuse. 2023;24(5):3697-714.

9. Nelson, C. A., Scott, R. D., Bhutta, Z. A., Harris, N. B., Danese, A., & Samara, M. (2020). Adversity in childhood is linked to mental and physical health throughout life. BMJ, 371, m3048. https://doi.org/10.1136/bmj.m3048

10. Strathearn, L., Giannotti, M., Mills, R., Kisely, S., Najman, J., & Abajobir, A. (2020). Long-term Cognitive, Psychological, and Health Outcomes Associated With Child Abuse and Neglect. Pediatrics, 146(4). https://doi.org/10.1542/peds.2020-0438

11. Mills, R., Alati, R., O'Callaghan, M., Najman, J. M., Williams, G. M., Bor, W., & Strathearn, L. (2011). Child abuse and neglect and cognitive function at 14 years of age: findings from a birth cohort. Pediatrics, 127(1), 4-10. https://doi.org/10.1542/peds.2009-3479

12. Mills, R., Kisely, S., Alati, R., Strathearn, L., & Najman, J. M. (2019). Cognitive and educational outcomes of maltreated and non-maltreated youth: A birth cohort study. Aust N Z J Psychiatry, 53(3), 248-255. https://doi.org/10.1177/0004867418768432

13. Abajobir, A. A., Kisely, S., Scott, J. G., Williams, G., Clavarino, A., Strathearn, L., & Najman, J. M. (2017). Childhood Maltreatment and Young Adulthood Hallucinations, Delusional Experiences, and Psychosis: A Longitudinal Study. Schizophr Bull, 43(5), 1045-1055. https://doi.org/10.1093/schbul/sbw175

14. Mills, R., Scott, J., Alati, R., O'Callaghan, M., Najman, J. M., & Strathearn, L. (2013). Child maltreatment and adolescent mental health problems in a large birth cohort. Child Abuse Negl, 37(5), 292-302. https://doi.org/10.1016/j.chiabu.2012.11.008

15. Abajobir, A. A., Kisely, S., Williams, G., Strathearn, L., Clavarino, A., & Najman, J. M. (2017). Gender differences in delinquency at 21 years following childhood maltreatment: A birth cohort study. Personality and Individual Differences, 106, 95-103. https://doi.org/10.1016/j.paid.2016.10.020

16. Abajobir, A. A., Kisely, S., Williams, G. M., Clavarino, A. M., & Najman, J. M. (2017). Substantiated Childhood Maltreatment and Intimate Partner Violence Victimization in Young Adulthood: A Birth Cohort Study. Journal of Youth and Adolescence, 46(1), 165-179. https://doi.org/10.1007/s10964-016-0558-3

17. Kisely, S., Abajobir, A. A., Mills, R., Strathearn, L., Clavarino, A., & Najman, J. M. (2018). Child maltreatment and mental health problems in adulthood: birth cohort study. British Journal of Psychiatry, 213(6), 698-703. https://doi.org/10.1192/bjp.2018.207

18. Mills, R., Kisely, S., Alati, R., Strathearn, L., & Najman, J. (2016). Self-reported and agency-notified child sexual abuse in a population-based birth cohort. J Psychiatr Res, 74, 87-93. https://doi.org/10.1016/j.jpsychires.2015.12.021

19. Bull, C., Trott, M., MNajman, J. M., Arnautovska, U., Siskind, D., Warren, N., & Kisely, S. (2024). Associations between child maltreatment and hospital admissions for alcohol and other substance use related disorers up to 40 years of age: Results from the Childhood dversity and Lifetime Morbidity study. Addiction (accepted).

20. Mills, R., Alati, R., Strathearn, L., & Najman, J. M. (2014). Alcohol and tobacco use among maltreated and non-maltreated adolescents in a birth cohort. Addiction, 109(4), 672-680. https://doi.org/10.1111/add.12447

21. Abajobir, A. A., Najman, J. M., Williams, G., Strathearn, L., Clavarino, A., & Kisely, S. (2017). Substantiated childhood maltreatment and young adulthood cannabis use disorders: A pre-birth cohort study. Psychiatry Res, 256, 21-31. https://doi.org/10.1016/j.psychres.2017.06.017

22. Kisely, S., Abajobir, A. A., Mills, R., Strathearn, L., Clavarino, A., Gartner, C., & Najman, J. M. (2020). Child Maltreatment and Persistent Smoking From Adolescence Into Adulthood: A Birth Cohort Study. Nicotine Tob Res, 22(1), 66-73. https://doi.org/10.1093/ntr/ntz039

23. Abajobir, A. A., Kisely, S., Williams, G., Strathearn, L., & Najman, J. M. (2018). Risky Sexual Behaviors and Pregnancy Outcomes in Young Adulthood Following Substantiated Childhood Maltreatment: Findings From a Prospective Birth Cohort Study. Journal of Sex Research, 55(1), 106-119. https://doi.org/10.1080/00224499.2017.1368975

24. Abajobir, A. A., Kisely, S., Williams, G., Strathearn, L., & Najman, J. M. (2017). Childhood maltreatment and high dietary fat intake behaviors in adulthood: A birth cohort study. Child Abuse & Neglect, 72, 147-153. https://doi.org/10.1016/j.chiabu.2017.08.002

25. Abajobir, A. A., Kisely, S., Williams, G., Strathearn, L., & Najman, J. M. (2017). Childhood maltreatment and adulthood poor sleep quality: a longitudinal study. Internal Medicine Journal, 47(8), 879-888. https://doi.org/10.1111/imj.13459

26. van, I. M. H., Bakermans-Kranenburg, M. J., Coughlan, B., & Reijman, S. (2020). Annual Research Review: Umbrella synthesis of meta-analyses on child maltreatment antecedents and interventions: differential susceptibility perspective on risk and resilience. J Child Psychol Psychiatry, 61(3), 272-290. https://doi.org/10.1111/jcpp.13147

27. Widom, C. S., & Wilson, H. W. (2015). Intergenerational Transmission of Violence. In J. Lindert & I. Levav (Eds.), Violence and Mental Health: Its Manifold Faces (pp. 27-45). Springer Netherlands. https://doi.org/10.1007/978-94-017-8999-8_2

28. Langevin, R., Marshall, C., & Kingsland, E. (2021). Intergenerational Cycles of Maltreatment: A Scoping Review of Psychosocial Risk and Protective Factors. Trauma, Violence, & Abuse, 22(4), 672-688. https://doi.org/10.1177/1524838019870917

29. Commonwealth of Australia (Department of Social Services). (2022). National Plan to End Violence against Women and Children 2022-2032. https://www.dss.gov.au/sites/default/files/documents/10_2023/national-plan-end-violence-against-women-and-children-2022-2032.pdf

30. Schäfer, I., Lotzin, A., Hiller, P., Sehner, S., Driessen, M., Hillemacher, T., … Grundmann, J. (2019). A multisite randomized controlled trial of Seeking Safety vs. Relapse Prevention Training for women with co-occurring posttraumatic stress disorder and substance use disorders. European Journal of Psychotraumatology, 10(1). https://doi.org/10.1080/20008198.2019.1577092

31. Morrissey, J. P., Jackson, E. W., Ellis, A. R., Amaro, H., Brown, V. B., & Najavits, L. M. (2005). Twelve-Month Outcomes of Trauma-Informed Interventions for Women With Co-occurring Disorders. Psychiatric Services, 56(10), 1213–1222. https://doi.org/10.1176/appi.ps.56.10.1213

32. Morgan-Lopez, A.A., Saavedra, L.M., Hien, D.A., Campbell, A.N., Wu, E., Ruglass, L., Patock-Peckham, J.A. and Bainter, S.C. (2014), Indirect effects of 12-session seeking safety on substance use outcomes: Overall and attendance class-specific effects. Am J Addict, 23: 218-225. https://doi.org/10.1111/j.1521-0391.2014.12100.x

33. Gatz, M., Brown, V., Hennigan, K., Rechberger, E., O'Keefe, M., Rose, T. and Bjelajac, P. (2007), Effectiveness of an integrated, trauma-informed approach to treating women with co-occurring disorders and histories of trauma: The Los Angeles site experience. J. Community Psychol., 35: 863-878. https://doi.org/10.1002/jcop.20186

34. Donohue, B. C., Romero, V., Herdzik, K., Lapota, H., Abdel Al, R., Allen, D. N., Azrin, N. H., & Van Hasselt, V. B. (2010). Concurrent Treatment of Substance Abuse, Child Neglect, Bipolar Disorder, Post-Traumatic Stress Disorder, and Domestic Violence: A Case Examination Involving Family Behavior Therapy. Clinical Case Studies, 9(2), 106-124. https://doi.org/10.1177/1534650109351928