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ACMS

Australian
Child
Maltreatment
Study

The Australian Child Maltreatment Study

National prevalence and
associated health outcomes
of child abuse and neglect



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The Australian Child Maltreatment Study: National prevalence and associated health outcomes of child abuse and neglect

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Introducing the Australian Child Maltreatment Study: baseline evidence for a national public health challenge

James G Scott^{1,2} , Ben Mathews^{3,4} 

Public health initiatives are needed urgently to prevent the maltreatment of Australian children

Child maltreatment, comprising physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence, is a serious public health concern. Its causal associations with health risk behaviours, physical illness and mental health problems are well established.^{1,2} Despite the enormous burden of disease attributable to child maltreatment in Australia,³ there are significant gaps in our knowledge. Information is lacking on the prevalence of child maltreatment, trends over time, patterns of exposure to multiple forms of maltreatment, and associated health risk behaviours and health outcomes through life.

This supplement introduces the Australian Child Maltreatment Study (ACMS), the first national survey in the world to study in detail the experiences and associated health and social outcomes of all five forms of child maltreatment. Funded by the National Health and Medical Research Council, our multidisciplinary research team led by Professor Ben Mathews surveyed 8503 Australians aged 16 years and over, to ascertain detailed information on their experiences of child maltreatment.

Key findings from this landmark study are presented in six articles. Haslam and colleagues⁴ describe the study methods. A shortcoming of previous child maltreatment research has been the non-standardised and unreliable way in which experiences are assessed. In the ACMS, child maltreatment was assessed using the Juvenile Victimization Questionnaire-R2 Adapted Version (Australian Child Maltreatment Study). To accurately assess experiences of child maltreatment, comprehensive methods were used to adapt the original Juvenile Victimization Questionnaire⁵ to precisely capture a broad range of maltreatment experiences. Rigorous protocols were established to support the safety and welfare of participants and interviewers.⁴ The sample was representative of the national population and included an oversample of 3500 Australians aged 16–24 years.

Mathews and colleagues⁶ report the prevalence of each of the five forms of child maltreatment: physical abuse, 32.0% (95% CI, 30.7–33.3%); sexual abuse, 28.5% (95% CI, 27.3–29.8%); emotional abuse, 30.9% (95% CI, 29.7–32.2%); neglect, 8.9% (95% CI, 8.1–9.7%); and exposure to domestic violence, 39.6% (95% CI, 38.3–40.9%). Women and gender diverse individuals experienced particularly high rates of child maltreatment. Comparison of prevalence of different forms of child maltreatment across age groups showed reductions in younger Australians for physical abuse and some types of sexual abuse, which coincides with increased awareness of the harm these forms of maltreatment cause to children. Of concern, most participants who experienced child maltreatment reported that it occurred many times or over many years.

Higgins and colleagues⁷ report the remarkable headline finding that the majority (62.2%) of Australians have

experienced maltreatment in childhood. Most experienced multi-type maltreatment, defined as the exposure to two or more of the five child maltreatment types. The prevalence of single-type maltreatment was 22.8% (95% CI, 21.7–24.0%), whereas 39.4% (95% CI, 38.1–40.7%) reported multi-type maltreatment. Nearly one-quarter of Australians experienced three to five types of maltreatment. Exposure to domestic violence was the most prevalent individual maltreatment type, and was present across the most frequent multi-type maltreatment patterns.

Lawrence and colleagues⁸ examined the association between child maltreatment and health risk behaviours of binge drinking, cannabis dependence, smoking, obesity, self-harm, and suicide attempts. All five types of child maltreatment were associated with increased rates of all health risk behaviours, and these behaviours commenced during adolescence. Controlling for all five types of child maltreatment simultaneously, sexual abuse and emotional abuse were associated with highest odds of health risk behaviours.

Scott and colleagues⁹ assessed ACMS participants for mental disorder diagnoses of lifetime major depressive disorder, and of current alcohol use disorder, generalised anxiety disorder, and post-traumatic stress disorder. The prevalence of mental disorders in non-maltreated participants was 21.6% (95% CI, 19.9–23.3%). This increased to 36.2% (95% CI, 33.5–38.9%) for those who experienced a single type of maltreatment, and 54.8% (95% CI, 52.6–56.9%) for participants who experienced multi-type maltreatment. Associations between experiences of child maltreatment and mental disorders were strongest for sexual abuse, emotional abuse, and multi-type maltreatment. Adjustment for childhood and current financial hardship, and current socio-economic status, did not significantly attenuate the associations.

Pacella and colleagues¹⁰ examined the associations between child maltreatment and health service use. Over the previous 12 months, compared with non-maltreated Australians, those who experienced child maltreatment were more likely to have had an overnight hospital admission, a mental health admission, and multiple visits to their general practitioner. Increased health service use was particularly high in those who experienced multi-type maltreatment.

The ACMS provides the first accurate prevalence estimates of experiences of child maltreatment in Australia. It is concerning to consider that the majority of Australians are maltreated as children. Further, most of these maltreated children experience multi-type maltreatment over a protracted period of time on multiple occasions.⁶ Unsurprisingly, increased risks of severe and persistent health problems and increased health service use are associated with child maltreatment. The ACMS provides stark and chilling evidence of the hardship many children endure across their lives as a result of the actions of those responsible for caring for them.

Child protection is everyone's responsibility. Historically it has been siloed from other services, frequently leading to the fragmented management of co-occurring child protection, health and social problems in the community. Prevention of child maltreatment is critical to improving the health of the Australian community. Widespread implementation of evidence-based interventions addressing family risk factors for child maltreatment such as parental conflict, mental illness and substance use is critical to the prevention of health risk behaviours⁸ and mental illness.¹¹ The closing article in this supplement is a comprehensive call to action for public health policy to forge a new era in child protection, child and adolescent health, and family support as a moral imperative and a nation-building necessity.¹²

Australia has led the world with public health initiatives such as the plain packaging of cigarettes, restrictions on smoking, and the mandatory wearing of seatbelts. With robust evidence of the enormous health and social harms attributable to child maltreatment, there is an urgent need for nationally coordinated public health initiatives to prevent the maltreatment of Australian children.

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The Australian Child Maltreatment Study (ACMS), a national survey of the prevalence of child maltreatment and its correlates: methodology

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The known: Mistreatment during childhood has a range of negative effects throughout life. Reliable estimates of the prevalence of maltreatment in Australia have not been published.

The new: The Australian Child Maltreatment Study (ACMS) provides initial national data for estimating the prevalence of the five major types of child maltreatment and their consequences for mental and physical health across life.

The implications: Stratified sampling by age group allows changes over time and associations with health outcomes across life to be assessed. The ACMS delivers robust evidence for policy and practice with the aim of averting and ameliorating the consequences of mistreatment during childhood.

Mistreating children has negative effects during their childhood,¹ across their life,² and between generations.³ Reliable Australian data on the prevalence and nature of maltreatment by type are needed to inform policies and practices for protecting children. The Australian Royal Commission into Institutional Responses to Child Sexual Abuse called for studies of the prevalence of maltreatment over time in recommendation 2.1.⁴ In 2021, the Australian National Strategy to Prevent and Respond to Child Sexual Abuse was launched. The Australian government emphasised the need to improve the evidence base regarding maltreatment and committed itself to supporting further studies that track changes in prevalence attributable to the strategy.⁵

In this article, we describe the methodology of the Australian Child Maltreatment Study (ACMS). The ACMS is the first nationally representative study of the prevalence of child maltreatment and its correlates in Australia, and only three other nationally representative studies anywhere⁶⁻⁸ have assessed the five major forms of child maltreatment (emotional abuse, neglect, physical abuse, sexual abuse, exposure to domestic violence) throughout childhood to age 18 years. As there is no consensus about which experiences constitute child maltreatment, not all studies of its prevalence and outcomes have assessed the same types of maltreatment.⁹ Emotional abuse, neglect, physical abuse, and sexual abuse are broadly recognised as child maltreatment in policy, law, and practice around the world.⁹ Exposure to domestic violence is increasingly regarded as a distinct domain of child maltreatment with important adverse effects;⁶ it was included by twelve of the eighteen national prevalence studies in a 2020 systematic review.⁹ Further, the Juvenile Victimization Questionnaire (on which the ACMS instrument was based) measures exposure to domestic violence; this maltreatment

Abstract

Objectives: To describe the aims, design, methodology, and respondent sample representativeness of the Australian Child Maltreatment Study (ACMS).

Design, setting: Cross-sectional, retrospective survey; computer-assisted mobile telephone interviewing using random digit dialling (computer-generated), Australia, 9 April – 11 October 2021.

Participants: People aged 16 years or more. The target sample size was 8500 respondents: 3500 people aged 16–24 years and 1000 respondents each from five further age groups (25–34, 35–44, 45–54, 55–64, 65 years or more).

Main outcome measures: Primary outcomes: Emotional abuse, neglect, physical abuse, sexual abuse, exposure to domestic violence during childhood, assessed with the Juvenile Victimization Questionnaire-R2 Adapted Version (Australian Child Maltreatment Study). Secondary outcomes: selected mental disorder diagnoses (Mini International Neuropsychiatric Interview, MINI), selected physical health conditions, health risk behaviours, health service use.

Results: The demographic characteristics of the ACMS sample were similar to those of the Australian population in 2016 with respect to gender, Indigenous status, region and remoteness category of residence, and marital status, but larger proportions of participants were born in Australia, lived in areas of higher socio-economic status, had tertiary qualifications, and had income greater than \$1250 per week. Population weights were derived to adjust for these differences. Associations between the number of calls required to recruit participants and maltreatment rates and health outcomes were not statistically significant.

Conclusions: The ACMS provides the first reliable estimates of the prevalence of each type of child maltreatment in Australia. These estimates, and those of associated mental health and health risk behaviours reported in this supplement can inform policy and practice initiatives for reducing the prevalence of child maltreatment and its consequences. Our benchmark study also provides baseline data for repeated waves of the ACMS that will assess the effectiveness of these initiatives.

type has been assessed by studies in nations comparable with Australia, such as the United Kingdom¹⁰ and Canada.¹¹ Finally, our inclusion of all five maltreatment types in our instrument was endorsed during testing phases by our international technical expert panel.

The primary goals of the ACMS are to establish a robust benchmark dataset for estimating the prevalence of child maltreatment in Australia; to separately examine associations between maltreatment and maltreatment type with mental health, physical health, and health risk behaviours throughout

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life; and to estimate the burden of disease associated with child maltreatment. We expand on our study protocol¹² by describing the design, measures, safety protocols, response rates, and sample representativeness in greater detail. This article is the methodological foundation for the other articles in this supplement¹³⁻¹⁷ and for other studies based on the dataset.

Method

The ACMS is a cross-sectional survey study of people in Australia aged 16 years or more about their childhood maltreatment

experiences and health. The computer-assisted telephone interview design allows survey items to be displayed or skipped according to participant responses. It also includes automatic prompts to check participant wellbeing and provide information about support at key stages of the interview or in response to specific answers. We oversampled young people (16–24 years) to provide a large baseline database with which the results of subsequent ACMS waves can be compared to assess changes in prevalence concomitant with policy, societal, and legal changes. The ACMS is conducted in accordance with the highest ethical and legal principles and scientific standards.¹⁸

1 Australian Child Maltreatment Study questionnaire modules and content

Content area	Measurement tool
Demographic information	Purpose-designed items to match major Australian surveys. Gender and sexuality were assessed with the open-ended questions “How would you define your gender?” and “How would you identify your sexuality?”. Responses were coded using a list of 14 response options. If required, interviewers read the first few options as a prompt. We conceptualised anyone who did not identify as male/man or female/women as being of diverse gender, and anyone who did not identify as being heterosexual as being of diverse sexuality.
Criminal justice system involvement	Purpose-designed items that assessed how many times the participant had been arrested, convicted, or imprisoned.
Use of and attitude to corporal punishment	Purpose-designed items assessing parental status, any use of corporal punishment as a parent or caregiver (yes/no), and frequency of use of corporal punishment.
Peer bullying and sibling victimisation	Purpose-designed items based on the Olweus definition of peer bullying. ²¹ Experiences and frequency of verbal, relational, and physical bullying are assessed. For verbal and relational bullying, we assessed whether it had been in person, online, or both. A final item about perceived reason for bullying provided options of race/ethnicity, sexuality or gender identity, and disability or impairment. Similar items were used to assess sibling verbal and physical victimisation.
Adverse childhood experiences	Adverse experiences not related to maltreatment were assessed using a subset of National Survey of Child Health items. ²² Maltreatment-related experiences were assessed using the Juvenile Victimization Questionnaire-R2: Adapted Version (Australian Child Maltreatment Study).
<ul style="list-style-type: none"> Emotional abuse Neglect Physical abuse Sexual abuse Exposure to domestic violence Corporal punishment* Internet sexual victimisation (aged 16–24 years only)[†] 	Juvenile Victimization Questionnaire-R2: Adapted Version (Australian Child Maltreatment Study): dichotomous response questions (yes/no), with follow-up items to capture contextual information: frequency of maltreatment (five major types); age at onset (five major types); age at cessation (five major types); relationship to persons who inflicted physical abuse, emotional abuse, sexual abuse; disclosure of physical abuse, sexual abuse (further details: Supporting Information, tables 1 and 2). Emotional abuse was assessed by three items, neglect by three items, physical abuse by two items, corporal punishment by one item, internet victimisation by two items, sexual abuse by five items (including one on sexual harassment), and exposure to domestic violence by four items.
Intimate partner violence	Intimate partner violence was assessed using a subset of the Composite Abuse Scale (Revised)-Short Form (CAS _R -SF). ²³ Lifetime prevalence (by any partner) was assessed, but not frequency.
Mental disorders	Diagnoses of mental disorders — major depressive disorder (lifetime), post-traumatic stress disorder (current), alcohol use disorder (current), generalised anxiety disorder (current) — were assessed with the Mini-International Neuropsychiatric Interview (MINI). ²⁰
Suicide and non-suicidal self-injury	Suicide attempts and non-suicidal self-injury (for each: lifetime attempts, age at onset, attempts during preceding year) were assessed using items from the National Adolescent Mental Health Survey. ²⁴
Health risk behaviours and chronic health conditions	Tobacco use, obesity, and alcohol use were assessed using items from the National Survey of Mental Health and Wellbeing (2007). ²⁵ Cannabis dependence was assessed using the Severity of Dependence Scale. ²⁶ Chronic health conditions (diabetes or high sugar, stroke, heart disease) were assessed using items from the National Survey of Mental Health and Wellbeing (2007). ²⁵ Additional items were added to assess bipolar disorder diagnosis and sexually transmitted diseases.
Health service use	Health service use during the preceding year was assessed using a subset of items from the National Survey of Mental Health and Wellbeing 2007: overnight hospital admissions (number; length; reasons) and numbers of consultations with physical and mental health professionals. ²⁵
Final items, willingness to be recontacted	Final items assessed the presence and extent of survey-related upset, based on items from the original Juvenile Victimization Questionnaire ⁸ and the National Survey of Children’s Exposure to Violence. ²⁷ These items were randomly used for 50% of participants. A single question assessed willingness to be contacted again for similar surveys.

* Corporal punishment was not deemed maltreatment, as it is not illegal in Australia and is not universally understood as physical abuse. Our conservative approach avoided inflating our estimate of physical abuse. † Internet sexual victimisation items (grooming by adults, non-consensual sharing of sexual images by anyone) were administered only to people aged 16–24 years who had internet access during childhood. Endorsements of these items were not included when estimating the overall prevalence of sexual abuse, but will be separately analysed, as will the sexual abuse item on harassment. ◆

Sampling frame and participants

We used a mobile phone sampling frame and random digit dial methodology (computer-generated numbers). In 2021, 99% of Australians used mobile phones.¹⁹ Respondents were eligible for participation if they were aged 16 years or more, and in an age group for which participants were required when contacted; they were excluded if their command of English was insufficient for participation. The target sample size was 8500 respondents: 3500 people aged 16–24 years and 1000 respondents from each of five further age groups (25–34, 35–44, 45–54, 55–64, 65 years or more). The sample size provides 80% power to estimate prevalence within one percentage point and to detect gender differences of 2.6 percentage points; it also provides 80% power to detect a two percentage point change in prevalence between studies.¹²

Interviewer training and welfare

A professional survey company, the Social Research Centre (<https://srcentre.com.au>), conducted the computer-assisted telephone interviews. Professional interviewers of various gender identification, age, and ethnic background with experience in conducting telephone interviews about sensitive topics administered the survey after comprehensive training. Training sessions, focused on the practical and logistic aspects of the study, were led by the lead author (DMH), a registered clinical psychologist, and Social Research Centre managers. A three-stage training and support process optimised interviewer competence and ensured interviewer and participant welfare. First, we provided pre-training material on the nature, scope, and significance of the study, and information about interviewers monitoring and responding to their own reactions. Second, we provided a 6-hour online group training session on survey content, interviewee and interviewer responses, safety and distress protocols, self-care, and general call management, using didactic, interactive, and role play methods. Finally, interviewers received ongoing support in online chats, supervisor debriefings, and group and personal employee assistance sessions; access to a clinical psychologist and psychiatrist was also provided. Instruction in the administration of the Mini-International Neuropsychiatric Interview (MINI)²⁰ used a train-the-trainer approach. The lead author and the first set of interviewers received formal training in administering the MINI by the owner of the instrument. The lead author provided training to others in subsequent training sessions. A computer-assisted telephone interviewing version of the MINI provided interviewers with built-in skip logic and scoring.

Participant safety and welfare

We developed two protocols to ensure participant safety.¹² First, we had a red flag protocol for protecting participants at current risk of harm from maltreatment. Participants aged 16 or 17 years who reported sexual or physical abuse during the preceding year were flagged for follow-up, and a registered clinical psychologist phoned them to provide support, identify the nature and magnitude of any risk, and ensure their safety. Second, a comprehensive distress protocol responded to any participant distress, whereby the degree of response increased with distress level. Further details about these protocols will be reported in a separate publication.

Data collection

The interviews were conducted during 9 April – 11 October 2021, the peak of the COVID-19 pandemic and associated lockdowns in

Australia, although Victoria was the only state with a sustained lockdown during this period. A text message was sent to each randomly generated phone number with information about the study and a link to the ACMS website (www.australianchildmaltreatmentstudy.org), which provided further survey and consent details, and options for opting into or out of participation. Those who opted out were not contacted again; those who opted in were phoned and invited to participate and to provide informed verbal consent. A maximum of eight calls were made to each phone number to recruit participants for the survey. All data will be deposited with the Australian Data Archive (<https://ada.edu.au>) in 2024 and will be accessible on application to the study authors.

Measures and outcomes

The primary instrument in our study was the Juvenile Victimization Questionnaire-R2: Adapted Version (Australian Child Maltreatment Study) (Box 1). Prior to the main survey, a multi-stage process of instrument development, refinement, and pilot testing checked the performance and validity of the adapted items, including conceptual mapping of the original JVQ-R2 maltreatment items to ensure congruence with conceptual models of child maltreatment; item modifications; expert review; cognitive testing; feedback from people who have experienced maltreatment, to assess face validity; and psychometric evaluation of pilot data. This process has been described elsewhere.²⁸ Detailed information on maltreatment constructs and item wording is provided in the Supporting Information, tables 1 and 2.

The primary outcomes were the proportions of respondents who reported physical abuse, sexual abuse, emotional abuse neglect or exposure to domestic violence during childhood. Secondary outcomes were selected mental disorders (using the MINI): major depressive disorder (lifetime), post-traumatic stress disorder (current), generalised anxiety disorder (current), and alcohol use disorder (current); selected physical health conditions (diabetes or high blood sugar levels, heart disease, sexually transmitted infection); health risk behaviours and conditions (harmful drinking, cannabis dependence, suicide attempts, non-suicidal self-injury, tobacco use, obesity); and health service use.

Statistical analysis

Response data are summarised as counts and proportions. The demographic characteristics of the ACMS sample were compared with those of the Australian population as determined

2 Outcomes of phone calls to randomly generated mobile phone numbers

Call outcome	Phone numbers	Estimated in-scope phone owners	Mean number of calls (SD)
Total calls made	404 180	210 373	2.2 (1.2)
No contact made	249 291 (61.7%)	149 570 (71.1%)	2.8 (0.8)
Contact made	154 889 (38.3%)	60 803 (28.9%)	1.4 (1.1)
Refused participation	87 168 (21.6%)	52 300 (24.9%)	1.3 (1.1)
Age quota filled	43 450 (10.8%)	0	1.7 (1.0)
Ineligible	15 768 (3.8%)	0	1.0 (1.0)
Completed interviews	8503 (2.1%)	8503 (4.0%)	2.1 (1.3)

SD = standard deviation. ♦

by the 2016 national census,²⁹ both directly and after weighting. Population weights were calculated using generalised raking³⁰ to calibrate the survey sample to the estimated resident population of Australia aged 16 years or more on 30 June 2021, by gender, age group, Indigenous status, country of birth, highest education level, and Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-economic Advantage and Disadvantage.³¹

Quality assurance

Computer-assisted telephone interviewing minimised interviewer error by automating skip and display patterns. Prior to the study, we tested display logic with dummy data and in test interviews. Interview administration was validated by listening to 5% of interviews to ensure that items were administered as intended and that interviewers followed protocols. Initial interviews by each interviewer were also monitored by survey company senior staff and academic project staff. Interviews were monitored for appropriate administration of all items and the application of all applicable protocols; all protocol deviations were discussed with the interviewer. We monitored data analyses in random spot checks of SAS 9.4 code and checking of analysis results in SPSS 27. Data code was checked by the statistical lead, or the study statistician if the statistical lead had conducted the analyses. The project manager repeated 30–50% of all primary analyses (for each article in this Supplement), randomly selected, as an additional check.

Ethics approval

The Queensland University of Technology Human Research Ethics Committee approved the study (1900000477).

Results

A total of 404 180 phone numbers were rung. No contact was made in 249 291 cases (61.7%); we estimated that 149 570 of these numbers were for people who would have been eligible and in an appropriate age group for our survey (60%; based on census fraction of households in each stratum). A further 15 563 numbers (3.8%) were for people we deemed ineligible on first contact (under 16 years of age or age quota already filled); 87 168 people refused participation before their eligibility could be determined (21.6%), of whom an estimated 52 300 would have been eligible (24.9%). In total, we estimated that 210 373 people would have been eligible to participate, and contact was made with 60 803 (28.9%) (Box 2).

Of 8773 people who commenced interviews, 8503 completed them (retention rate, 97.4%). The final response rate with respect to the estimated number of eligible candidates was 4.0%; with

3 Demographic characteristics of the Australian Child Maltreatment Study (ACMS) respondent sample (2021), and of Australians aged 16 years or more (2016)*

	Australian Child Maltreatment Study		2016 census	
	Number	Proportion		Proportion
		Unweighted	Weighted [†]	
Gender (self-identified)				
Men	4195	49.3%	48.1%	48.8%
Women	4182	49.2%	50.9%	51.2%
Non-binary/other	126	1.5%	1.0%	NA [‡]
Age group (years)				
16–24	3500	41.1%	13.6%	13.6%
25–34	1000	11.8%	18.2%	18.2%
35–44	1000	11.8%	17.0%	17.0%
45–54	1002	11.8%	15.7%	15.7%
55–64	1001	11.8%	14.5%	14.5%
65 or more	1000	11.8%	20.9%	20.9%
Indigenous status				
Aboriginal or Torres Strait Islander	290	3.4%	2.7%	2.4%
Non-Indigenous	8176	96.2%	96.8%	91.5%
Not stated	37	0.4%	0.5%	6.2%
Marital status				
Single/never married	4046	47.7%	29.8%	27.4%
Living together but not married	918	10.8%	11.0%	15.3%
Married	2715	32.0%	43.9%	42.7%
Separated/divorced/widowed	803	9.4%	15.3%	14.6%
Residence: region ³³				
Metropolitan	5798	68.2%	64.4%	67.0%
Regional/rural	2705	31.8%	35.6%	33.0%
Residence: remoteness ³³				
Major cities	6247	73.5%	69.6%	72.1%
Inner regional	1471	17.3%	19.1%	18.0%
Outer regional	658	7.7%	9.5%	8.1%
Remote	83	1.0%	1.2%	1.0%
Very remote	44	0.5%	0.6%	0.8%
Birthplace of participant				
Born in Australia	6347	74.6%	65.9%	64.6%
Born overseas	2146	25.3%	34.0%	28.3%
Not stated	10	0.1%	0.1%	7.1%
Birthplace of parents				
Both parents born in Australia	4362	51.3%	48.9%	45.5%
One parent born in Australia	1351	15.9%	10.6%	9.8%
Both parents born overseas	2762	32.5%	40.2%	37.5%
Not known	28	0.3%	0.3%	7.2%

Continues

3 Continued

Highest level of education				
Postgraduate degree	1100	12.9%	8.1%	8.0%
Undergraduate degree	1859	21.9%	17.9%	17.7%
College certificate/diploma	1385	16.3%	19.6%	19.4%
Year 12	2273	26.8%	20.6%	21.2%
Trade certificate	692	8.1%	13.5%	13.4%
Year 10	1091	12.8%	18.3%	18.1%
Year 9 or less	78	0.9%	2.1%	2.1%
Employment status				
Employed full-time	3601	42.5%	43.1%	39.1%
Employed part-time	2372	27.9%	21.3%	20.3%
Unemployed	724	8.5%	7.4%	4.5%
Not in the labour force	1779	21.0%	28.2%	36.0%
Index of Relative Socio-economic Advantage and Disadvantage ³¹				
Lowest quintile	1086	12.8%	15.6%	15.6%
2nd quintile	1180	13.9%	15.9%	15.9%
3rd quintile	1497	17.6%	19.0%	19.0%
4th quintile	1938	22.8%	20.8%	20.8%
Highest quintile	2802	33.0%	28.7%	28.7%
Individual income (weekly)				
Lower than \$500	2316	27.2%	25.1%	45.6%
\$500–1249	2158	25.4%	24.0%	32.0%
\$1250 or more	2496	29.4%	32.6%	22.4%
Not stated	1533	18.0%	18.3%	NA [‡]

* Source: 2016 census of population and housing (using TableBuilder Basic).²⁹ Characteristics by age group are provided in the Supporting Information, tables 3 to 6. † Weighted by gender, age group, Indigenous status, country of birth, highest education level, and Socio-Economic Indexes for Areas Index of Relative Socio-economic Advantage and Disadvantage. ‡ Not an option in 2016 census. ◆

respect to eligible candidates contacted it was 14.0%. Most people who refused were too busy or had insufficient time to participate.

The mean interview time was 26.8 minutes (standard deviation, 8.1 minutes); the median length was 25.7 minutes (interquartile range, 21.3–31.0 minutes). Eighteen people who received initial text message invitations to participate submitted complaints (0.004%). Three study participants submitted complaints (0.04%); two were about interviewer style, one was related to the phrasing of the sexuality item. There were no complaints regarding the maltreatment or adversity survey items. No adverse outcomes were reported.

Population representativeness of the respondent sample

The demographic characteristics of the ACMS sample were similar to those of the Australian population in 2016 (both with and without weighting) with respect to gender, Indigenous status, region and remoteness category of residence (Accessibility/Remoteness Index for Australia, ARIA+³²), and marital status, but larger proportions of participants were born in Australia, lived in areas of higher socio-economic status, had tertiary qualifications, or had income greater than \$1250 per week. The intentionally higher proportion of participants aged 16–24

years had an impact on some characteristics; after adjusting for age, the ACMS sample and the Australian population were similar with respect to birthplace in Australia or overseas (self and parents) (Box 3).

Interviews were completed on the first call for 3334 participants (39.2%); 475 interviews (5.6%) required five or more calls. Associations between the number of calls required to recruit participants and maltreatment rates and health outcomes were not statistically significant, except that the prevalence of alcohol use disorders was higher among those who required more calls ($P = 0.005$) (Supporting Information, figures 1 to 4). The prevalence of health outcomes (general health, obesity, smoking, frequency of alcohol use) was similar to those reported by the 2017 Australian National Health Survey,³³ but larger proportions of ACMS participants reported that they in fair or poor health or were obese, and the proportion who reported never drinking alcohol was smaller (Box 4).

Missing data

Most participants provided responses to all questions, including those about maltreatment; the overall item non-response rate was lower than 1%. Non-response was greatest for items on sexual abuse (by item: 65–77 non-responses, 0.8–0.9%) (Box 5). Given the low non-response rate, we conservatively categorised people who declined an answer as not having experienced the relevant maltreatment type when estimating prevalence.

For 29 participants, data for some sexual abuse follow-up items were initially missing because of a programming error. To retrieve the data without causing unnecessary distress, a clinical psychologist attempted to contact 23 participants who had consented to repeat contact and had not initially reported distress;

the nineteen who could be contacted provided the information without distress or need for further support.

Participant safety and welfare

A total of 59 participants (15% of those age 16 or 17 years) were flagged for follow-up and were assessed by a clinical psychologist to ensure safety. Based on information provided by participants, no cases warranted referral to mental health care professionals, child protection agencies, or the police. A total of 77 distress-related call alerts (0.1% of all participants) were made, of which six were deemed significant and referred to the ACMS team for mental health review. None required intensive intervention, suggesting that distress was transitory.

Discussion

The ACMS provides the first large, nationally representative dataset on the prevalence in Australia of each of the five major types of child maltreatment and their health and behavioural correlates. Moreover, our data, stratified by maltreatment type, can help identify which children are at greatest risk of specific

4 Estimated prevalence of selected health indicators in the Australian Child Maltreatment Study (weighted data) and the National Health Survey 2017³³

	Australian Child Maltreatment Study		National Health Survey 2017
	Number	Proportion	Proportion
General health			
Excellent	1330	14.6% (13.7–15.5%)	20.9% (20.1–21.8%)
Very good	2891	32.5% (31.2–33.7%)	35.5% (34.7–36.3%)
Good	2858	34.6% (33.3–35.9%)	28.8% (28.1–29.5%)
Fair	1105	13.6% (12.7–14.6%)	11.0% (10.4–11.6%)
Poor	319	4.6% (4.0–5.3%)	3.7% (3.4–4.1%)
Smoking status			
Ever smoked	3176	46.0% (44.6–47.3%)	43.5% (42.6–44.3%)
Daily smoker	831	11.8% (10.9–12.8%)	13.3% (12.8–13.7%)
Body mass index			
Underweight (< 18.5 kg/m ²)	264	2.1% (1.8–2.5%)	2.3% (1.2–3.5%)
Healthy weight (18.5–25 kg/m ²)	3599	37.5% (36.1–38.8%)	39.9% (38.6–41.4%)
Overweight (25–30 kg/m ²)	2467	33.6% (32.3–34.9%)	34.0% (33.0–34.9%)
Obese (≥ 30 kg/m ²)	1794	26.8% (25.5–28.0%)	23.8% (22.8–24.5%)
Not stated	379	—	—
Alcohol use frequency (preceding twelve months)			
Never	1343	17.5% (16.4–18.5%)	23.6% (23.2–24.0%)
Less than once a month	1811	20.8% (19.7–21.9%)	15.5% (14.8–16.2%)
One to three days per month	2121	21.0% (19.9–22.0%)	18.1% (16.9–19.3%)
One to four days per week	2326	27.7% (26.5–28.9%)	31.1% (29.5–32.7%)
Every day/nearly every day	902	13.1% (12.1–14.0%)	11.7% (10.7–12.7%)

forms of maltreatment, by whom, and at what ages. This knowledge is essential for the development of national evidence-based prevention and intervention initiatives. Further, the ACMS gathers data by age group, providing information that will aid understanding of changes in maltreatment over time, a broad evidence base that can identify where progress has occurred and where efforts need to be intensified.

We found the evidence needed can be gathered in Australia with the methodology used by the ACMS, achieving the objectives of the national policy.⁵ The low levels of distress among ACMS participants, their willingness to be recontacted, and their comprehensive responses to a broad survey indicate strong support for this research among people who have or have not experienced maltreatment as children. The oversampling of young people (16–24 years old) provides sufficient power for detecting small changes in prevalence in further survey rounds, allowing evaluation of the impact of policy and practice initiatives.

The JVQ-R2 Adapted Version (Australian Child Maltreatment Study) survey instrument was rigorously adapted and tested,¹⁰ enabling robust assessment of a broad range of maltreatment sub-domains for the five maltreatment types, and it captured detailed information about their context. Our use of the MINI as a diagnostic measure of mental disorder was a further strength, as most studies apply only symptom scales.⁶ Finally, the

assessment of risk factors such as adverse childhood experiences (parental separation or divorce, parental imprisonment, living with someone who had a mental illness, had suicidal thoughts, was severely depressed, or misused alcohol or drugs) and bullying by peers or siblings allows the specific influence of maltreatment to be determined while controlling for potentially confounding factors.

Survey studies are subject to response bias if there are systematic differences between those who participate and those who do not. What we can know about people who did not participate is limited, but our respondent sample was generally representative of the Australian population with respect to most major characteristics, both before and after weighting, indicating that random digit mobile phone dialling is effective in this respect. Our findings regarding several health-related outcomes were similar to those reported by the 2017 National Health Survey.³³ People who had experienced child maltreatment may have been more interested in participating in our survey, or they may choose not to participate if they do not wish to discuss it.³⁴ If people with experience of mistreatment as children were more likely to participate, they might be easier to recruit than other participants; however, we found that associations between the number of calls required to recruit participants and maltreatment rates or health outcomes were not statistically significant.

5 Missing survey data, by Juvenile Victimization Questionnaire-R2 Adapted Version (Australian Child Maltreatment Study) item

Maltreatment type/survey item	Missing responses
Emotional abuse	
EA1. Hostile interaction/denigration	21 (0.2%)
EA2. Rejection	23 (0.3%)
EA3. Emotional unavailability	65 (0.8%)
Neglect	
NEG1. Environmental neglect	12 (0.1%)
NEG2. Nutritional/physical neglect	16 (0.2%)
NEG3. Medical neglect	24 (0.3%)
Physical abuse	
PA1. Severe physical abuse	20 (0.2%)
PA2. Moderate physical abuse	26 (0.3%)
Corporal punishment	
CP1. Corporal punishment	32 (0.4%)
Internet victimisation*	
IV1. Non-consensual sharing of sexual images	10 (0.3%)
IV2. Internet grooming	9 (0.3%)
Sexual abuse	
SA1. Sexual harassment	65 (0.8%)
SA2. Abusive exposure	66 (0.8%)
SA3. Touching (excludes intercourse)	72 (0.8%)
SA4. Attempted intercourse	65 (0.8%)
SA5. Abusive intercourse	77 (0.9%)
Exposure to domestic violence	
EDV1. Physical violence between parents	21 (0.2%)
EDV2. Serious threats of domestic violence	31 (0.4%)
EDV3. Damage of property or pets	40 (0.5%)
EDV4. Intimidation or control	58 (0.7%)

* Respondents aged 16–24 years only. ◆

As the ACMS employs a cross-sectional retrospective design, it cannot establish causal associations. Longitudinal studies would expand our understanding of life course processes, the impact of support for people who have experienced maltreatment as children, and mechanisms of influence and resilience.

Limitations

The response rate for our survey was very low. This limitation is consistent with the generally marked decline in telephone survey response rates;³⁵ for example, response rates for telephone public opinion polls conducted by the American think tank, the Pew Research Center, dropped from 36% to 9% during 1997–2016.³⁶ The proportions of Aboriginal and Torres Strait Islander people in our survey corresponded to the national proportion, but the small number may nevertheless preclude subgroup analyses. Similarly, the survey is adequately powered to estimate the overall prevalence of maltreatment, but is less able to detect

very small changes in specific types of maltreatment types with low prevalence. We intentionally included participants aged 16 and 17 years to allow consideration of prevalence during the preceding year and to provide a baseline for future surveys; however, this may have led to underestimation of prevalence because further maltreatment before the age of 18 years will not be included. Recall bias was possible, as in all surveys of past experience. Our survey provided data for assessing birth cohort prevalence and associated health outcomes through life, but, as older participants may have less accurate recall of more distant events or may have reframed their perceptions of some events, differences between birth cohorts should be interpreted with caution. We did not assess the degree of child maltreatment experienced by participants. Finally, our survey was conducted during the COVID-19 pandemic, when declines in mental health were reported around the world,³⁷ perhaps amplifying apparent relationships between maltreatment and adverse outcomes. However, lockdowns in Australia had only a mildly greater impact on people with mental problems.³⁸

Conclusion

The ACMS provides the first reliable estimates of the prevalence of each type of child maltreatment in Australia, differences between age groups, and correlates throughout life. The prevalence estimates and associated mental health and health risk behaviours reported in other articles in this supplement can be used to inform policy and practice initiatives for reducing child maltreatment and its consequences. Our benchmark study also provides baseline data for repeated waves of the ACMS that will assess the effectiveness of these initiatives.

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Data sharing statement: Under the registered data management plan, final datasets will be stored on the Australian Data Archive; access details will be published on the ACMS website (www.australianchildmaltreatmentstudy.org) in 2024. Under a multi-institutional agreement, the survey instrument is the intellectual property of the research team. It will be made available under a Creative Commons licence after an embargo period.

Competing interests: No relevant disclosures. ■

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Supporting Information

Additional Supporting Information is included with the online version of this article.

The prevalence of child maltreatment in Australia: findings from a national survey

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The known: Child maltreatment — physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence — is a major public health problem. Population-level evidence regarding the prevalence of child maltreatment in Australia is not available.

The new: Physical abuse, sexual abuse, emotional abuse, and exposure to domestic violence were frequently reported by survey respondents, and women reported sexual abuse, emotional abuse, and neglect more often than men. Recent declines in physical and sexual abuse may reflect the effect of public health interventions.

The implications: Our findings are relevant to the health, education, and welfare sectors. Public health policy and prevention efforts can further reduce levels of physical and sexual abuse, and reduce those of emotional abuse and exposure to domestic violence.

Child maltreatment — physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence — is a major public health challenge. Systematic reviews and meta-analyses have found that child maltreatment is associated with mental health disorders, physical health problems, and health risk behaviours throughout life.¹⁻³ The magnitude of the challenge to individuals and to society is reflected in the United Nations' Sustainable Development Goals Target 16.2, which aims to end all forms of violence against children.⁴

Public health efforts to prevent, identify, and respond to child maltreatment must be informed by reliable evidence about its prevalence, nature, and associated health effects. However, rigorous evidence about its prevalence is scarce, both in Australia and overseas. Meta-analyses have generated global estimates of the prevalence of specific maltreatment types (based on self-reports): physical abuse (22.6%),⁵ sexual abuse (12.7%),⁶ and emotional abuse (36.3%).⁷ In a recent systematic review, we found that only three national studies had assessed the prevalence of all five major types of child maltreatment to age 18 years in a representative population sample,⁸ including a United Kingdom study (physical abuse, 8.4%; sexual abuse, 24.1%; emotional abuse, 6.9%; neglect, 16%; exposure to domestic violence, 23.7%).⁹

The prevalence of all five types of maltreatment has not been assessed in a nationally representative Australian sample.^{8,10} A 2000 survey of a nationally representative sample of 1784 adults aged 18–59 years found that 33.6% of women and 15.9% of men reported non-penetrative sexual abuse before the age of 16; 12% of women and 4% of men reported penetrative sexual abuse.¹¹ Similarly, cohort studies and personal safety surveys have examined selected aspects of child maltreatment, but have not comprehensively investigated its prevalence or nature.¹²⁻¹⁵

Abstract

Objectives: To estimate the prevalence in Australia of each type of child maltreatment; to identify gender- and age group-related differences in prevalence.

Design, setting: Cross-sectional national survey; mobile telephone interviews using random digit dialling (computer-generated), Australia, 9 April – 11 October 2021. Retrospective self-report data using validated questionnaire (Juvenile Victimization Questionnaire-R2 Adapted Version (Australian Child Maltreatment Study)).

Participants: People aged 16 years or more. The target sample size was 8500 respondents: 3500 people aged 16–24 years and 1000 respondents each from five further age groups (25–34, 35–44, 45–54, 55–64, 65 years or more).

Main outcome measures: Proportions of respondents reporting physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence to age 18 years, assessed with the Juvenile Victimization Questionnaire-R2 Adapted Version (Australian Child Maltreatment Study), overall and by gender and age group, and weighted to reflect characteristics of the Australian population aged 16 years or more in 2016.

Results: Complete survey data were available for 8503 eligible participants (14% response rate). Physical abuse was reported by 32.0% of respondents (95% confidence interval [CI], 30.7–33.3%), sexual abuse by 28.5% (95% CI, 27.3–29.8%), emotional abuse by 30.9% (95% CI, 29.7–32.2%), neglect by 8.9% (95% CI, 8.1–9.7%), and exposure to domestic violence by 39.6% (95% CI, 38.3–40.9%). The proportions of respondents who reported sexual abuse, emotional abuse, or neglect were each statistically significantly larger for women than men. The reported prevalence of physical abuse by respondents aged 16–24 years was lower than for those aged 25–34 years, and that of sexual abuse was lower than for those aged 35–44 years, suggesting recent declines in the prevalence of these maltreatment types.

Conclusions: Child maltreatment is common in Australia, and larger proportions of women than men report having experienced sexual abuse, emotional abuse, and neglect during childhood. As physical and sexual abuse may have declined recently, public health policy and practice may have positive effects, justifying continued monitoring and prevention activities.

Defining the epidemiology of child maltreatment in Australia requires rigorous approaches informed by the best relevant studies, a large, nationally representative sample, and assessment of all types of self-reported maltreatment to the age of 18 years. Assessing whether these experiences were isolated or repeated is also important.

One primary aim of the Australian Child Maltreatment Study (ACMS) was to determine the prevalence of each of the five types

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of child maltreatment in Australia. The ACMS also determined prevalence by gender and age group.

Methods

The ACMS is a cross-sectional survey study of people in Australia aged 16 years or more about their childhood and health. As detailed elsewhere in this supplement,¹⁶ participants were recruited using a mobile phone sampling frame and random digit dial methodology.

Measures

Child maltreatment was assessed with the Juvenile Victimization Questionnaire (JVQ)-R2: Adapted Version (Australian Child Maltreatment Study),¹⁷ an adapted and validated version of an instrument used in national studies in the United States,¹⁸ the United Kingdom,⁹ and other countries,^{8,19-20} as well as in smaller studies.²¹ The adaptation and validation of the instrument is described in detail elsewhere.²²

The adapted version of the JVQ-R2 includes 16 items that assessed all five major types of maltreatment.¹⁶ The behaviourally specific questions elicited dichotomous responses (yes or no) about whether the participant had experienced any subdomain of each maltreatment type (physical abuse, two subdomains; sexual abuse, four; emotional abuse, three; neglect, three; exposure to domestic violence, four subdomains). Follow-up questions assessed characteristics of these experiences, including the number of times they were experienced. The survey also included items on other adverse experiences during childhood, peer bullying, mental health disorders, physical health, health risk behaviours, and health service use.

Definitions

As described in the protocol,¹⁷ we applied definitions of each type of child maltreatment that were based on rigorous conceptual models.²³⁻²⁷ Accordingly, physical abuse, emotional abuse, neglect, and exposure to domestic violence were conceptualised as acts and omissions by parents and parent-like caregivers, while sexual abuse included acts by any person. Informed by these models, and by previous studies using the original Juvenile Victimization Questionnaire, we designed questions that reflected operational definitions of each maltreatment type.

Procedures

The study procedures are detailed elsewhere in this Supplement.¹⁶ In short, the target survey respondent number was 8500: 3500 people aged 16–24 years (purposely oversampled) and 1000 in each of the age groups 25–34, 35–44, 45–54, 55–64, and 65 years or more. To ensure that the sample was representative of the Australian population, survey data were weighted by age group, gender, Indigenous status, country of birth (Australia or overseas), highest educational level, and residential socio-economic status (Relative Socio-economic Advantage and Disadvantage quintiles).¹⁶

Statistical analysis

Data from the computer-assisted telephone interview software platform were imported into SAS 9.4; data were cleaned by author DL and a research assistant. We calculated prevalence rates for the whole sample, and by gender and age group, applying methods based on conceptual models²³⁻²⁷ and employed by other studies.^{9,18-20,28} For physical abuse, sexual abuse, and exposure

to domestic violence, prevalence was based on affirmative responses to any question on these maltreatment types, regardless of frequency. For emotional abuse and for neglect, we estimated prevalence from affirmative responses to any of the questions if experienced over a period of weeks, months, or years.^{23,24,28} For sexual abuse, we separately estimated rates of abuse by any person and by adult family members.¹⁸ The prevalence of contact sexual abuse was estimated from affirmative responses to one or more of three contact sexual abuse questions — contact abuse without intercourse (touching); attempted forced intercourse; forced intercourse — and the prevalence of non-contact sexual abuse was estimated from affirmative responses to the sole sexual abuse question on exposure or voyeurism.

The frequency of maltreatment is rarely reported, and has been assessed with different methods.²⁹ We estimated frequency by categorising the number of times the experiences were reported, consistent with other studies in Australia^{30,31} and Canada.²⁵

Survey-weighted data for the five child maltreatment types were summarised as numbers and proportions with 95% confidence intervals (CIs) calculated using the Taylor series method. The statistical significance of differences in proportions by gender or age group were assessed in Rao–Scott χ^2 tests. All analyses were conducted in SAS version 9.4; graphs were prepared in Stata 17. Each analysis was independently checked by two co-authors, in random spot checks of SAS code and checking of analysis results in SPSS 28.

Ethics approval

The Queensland University of Technology Human Research Ethics Committee approved the study (#1900000477). Each survey respondent provided verbal informed consent to participation.

Results

We estimated that 210 373 of the 404 180 people we attempted to contact would have been eligible to participate in our survey; contact was made with 60 803, of whom 8503 completed the survey. The response rate with respect to the estimated number of eligible candidates was 4.0%; with respect to eligible candidates contacted it was 14.0%. The demographic characteristics of the sample (apart from age distribution) broadly matched those for people aged 16 years or more in the 2016 Australian census. Potential participation biases were deemed to be minor.¹⁶

Prevalence of child maltreatment types

A total of 2623 respondents reported physical abuse during childhood (32.0%; 95% CI, 30.7–33.3%) (Box 1). The subdomains of severe (1507 people, 18.3%) and moderate physical abuse (1639, 20.1%) were reported by similar proportions of respondents (Supporting Information, table 1). Emotional abuse was reported by 2743 people (30.9%; 95% CI, 29.7–32.2%) (Box 1). Subdomains of emotional abuse were reported at different rates: hostile interactions were reported by 2154 (23.8%), rejection by 810 (8.8%), and emotional unavailability by 1870 people (21.6%) (Supporting Information, table 2). Neglect was reported by 759 people (8.9%; 95% CI, 8.1–9.7%) (Box 1). Subdomains of neglect were reported at different rates: environmental neglect was reported by 361 (3.9%), physical neglect by 335 (4.1%), and medical neglect by 402 people (4.8%) (Supporting Information, table 3). Exposure to domestic violence was reported by 3487 people (39.6%; 95% CI, 38.3–40.9%) (Box 1). Subdomains of domestic violence were reported

1 Weighted proportions (with 95% confidence intervals) of survey respondents who reported maltreatment during childhood, by maltreatment type, age group, and gender*

Age group	Number of respondents	Physical abuse	Sexual abuse	Emotional abuse	Neglect	Exposure to domestic violence
All ages	8503	32.0% (30.7–33.3%)	28.5% (27.3–29.8%)	30.9% (29.7–32.2%)	8.9% (8.1–9.7%)	39.6% (38.3–40.9%)
Women	4182	31.5% (29.7–33.3%)	37.3% (35.5–39.2%) [†]	35.6% (33.8–37.4%) [†]	10.8% (9.5–12.0%) [†]	40.8% (38.9–42.6%)
Men	4195	32.1% (30.3–33.9%)	18.8% (17.3–20.3%)	25.4% (23.7–27.1%)	6.7% (5.7–7.6%)	38.0% (36.1–39.9%)
Gender-diverse	126	50% (37–63%)	52% (39–65%)	58% (45–71%)	26% (15–38%)	58% (45–71%)
16–24 years	3500	28.2% (26.6–29.9%)	25.7% (24.1–27.3%)	34.6% (32.8–36.3%)	10.3% (9.2–11.4%)	43.8% (42.0–45.6%)
Women	1662	29.0% (26.6–31.4%)	35.2% (32.7–37.8%) [†]	40.5% (37.9–43.1%) [†]	12.5% (10.7–14.2%) [†]	45.8% (43.2–48.5%)
Men	1748	26.3% (24.0–28.5%)	14.5% (12.6–16.5%)	26.9% (24.6–29.3%)	7.2% (5.8–8.5%)	40.8% (38.2–43.3%)
25–34 years	1000	36.0% (32.7–39.3%) [‡]	27.4% (24.4–30.5%)	36.7% (33.5–40.0%)	11.7% (9.5–14.0%)	48.1% (44.7–51.5%)
Women	470	37.7% (32.9–42.5%)	37.6% (32.8–42.4%) [†]	42.7% (37.9–47.6%) [†]	15% (11–18%)	49.0% (44.1–54.0%)
Men	516	34.0% (29.5–38.5%)	16.9% (13.4–20.5%)	29.8% (25.4–34.1%)	8.3% (5.6–11%)	47.0% (42.2–51.7%)
35–44 years	1000	33.2% (30.0–36.5%) [‡]	30.3% (27.1–33.5%) [‡]	31.2% (28.0–34.4%)	9.3% (7.2–11%)	43.9% (40.4–47.3%)
Women	516	33.3% (28.8–37.9%)	40.1% (35.3–44.8%) [†]	37.8% (33.2–42.5%) [†]	13% (9.3–16%) [†]	45.7% (40.9–50.5%)
Men	476	32.8% (28.1–37.6%)	20% (16–24%)	24.1% (19.7–28.5%)	5.7% (3.3–8.0%)	41.5% (36.5–46.5%)
45–54 years	1002	34.2% (30.9–37.5%) [‡]	29.8% (26.7–32.9%)	33.0% (29.7–36.2%)	7.5% (5.5–9.4%)	41.3% (38.0–44.7%)
Women	521	32.8% (28.2–37.3%)	38.8% (34.1–43.5%) [†]	37.5% (32.9–42.2%)	8.1% (5.3–11%)	42.4% (37.6–47.1%)
Men	477	36.0% (31.2–40.7%)	20.5% (16.6–24.5%)	28.6% (24.1–33.1%)	6.8% (4.1–9.4%)	40.1% (35.2–45.0%)
55–64 years	1001	35.2% (31.9–38.4%) [‡]	30.7% (27.6–33.9%)	32.7% (29.5–35.9%)	8.4% (6.5–10%)	39.1% (35.7–42.4%)
Women	509	34.4% (29.8–39.1%)	40.2% (35.5–45.0%) [†]	37.4% (32.7–42.1%) [†]	10% (7.1–13%)	39.9% (35.2–44.6%)
Men	487	35.5% (30.8–40.2%)	19.8% (16.1–23.6%)	27.6% (23.3–31.8%)	6.6% (4.2–9.0%)	38.2% (33.4–43.0%)
65 years or older	1000	26.0% (23.0–29.0%)	27.4% (24.3–30.5%)	20.5% (17.7–23.3%) [‡]	6.8% (5.0–8.6%) [‡]	25.0% (22.1–28.0%) [‡]
Women	504	24.1% (20.0–28.1%)	33.4% (28.9–37.9%) [†]	23.2% (19.2–27.3%)	7.6% (5.0–10%)	27.3% (23.1–31.5%)
Men	491	28.2% (23.6–32.7%)	20.1% (16.0–24.1%)	17% (13–21%)	5.7% (3.3–8.0%)	22.2% (18.1–26.4%)

CI = confidence interval. * The raw numbers underlying the listed proportions are included in the Supporting Information, tables 1–5. Proportions are weighted by age group, gender, Indigenous status, country of birth (Australia or overseas), highest educational level, and residential socio-economic status (Relative Socio-economic Advantage and Disadvantage quintiles).¹⁶

[†] Confidence intervals for women and men do not overlap (ie, statistically significant difference in proportions). [‡] Confidence intervals for respondents aged 16–24 years and respective age group (combined men and women only) do not overlap (ie, statistically significant difference in proportions). The difference for sexual abuse between the 16–24- and 35–44-year groups was also deemed to be meaningfully different. ◆

at different rates: exposure to inter-parental physical violence was reported by 1606 (19.9%), serious threats by 1310 (15.5%), parents damaging property by 2612 (28.7%), and inter-parental intimidation or control by 1921 people (22.0%) (Supporting Information, table 4).

A total of 2348 respondents reported sexual abuse by any person (28.5%; 95% CI, 27.3–29.8%) (Box 1). Contact sexual abuse was reported by 1960 people (23.7%; 95% CI, 22.6–24.9%), including sexual touching by 1525 (18.9%), attempted forced intercourse by 1201 (13.8%), and forced intercourse by 717 (8.7%). Non-contact sexual abuse was reported by 1443 people (18.1%; 95% CI, 17.0–19.1%) (Supporting Information, table 5).

Sexual abuse by an adult family member was reported by 551 people (7.8%; 95% CI, 7.0–8.5%). Contact sexual abuse by adult family members was reported by 464 people (6.7%; 95% CI, 6.0–7.5%), including sexual touching by 423 (6.1%), attempted forced intercourse by 214 (3.1%), and forced intercourse by 135 (1.9%) (Supporting Information, table 6).

Prevalence of child maltreatment types, by gender

Physical abuse during childhood was reported by 1281 women (31.5%; 95% CI, 29.7–33.3%) and 1284 men (32.1%; 95% CI,

30.3–33.9%). Emotional abuse was reported by 1573 women (35.6%; 95% CI, 33.8–37.4%) and 1088 men (25.4%; 95% CI, 23.7–27.1%); neglect was reported by 449 women (10.8%; 95% CI, 9.5–12.0%) and 276 men (6.7%; 95% CI, 5.7–7.6%); exposure to domestic violence was reported by 1790 women (40.8%; 95% CI, 38.9–42.6%) and 1619 men (38.0%; 95% CI, 36.1–39.9%). For emotional abuse (exceptions: 45–54 years, 65 years or more) and neglect (exceptions: 45–54 years, 55–64 years, 65 years or more) the confidence intervals for the weighted proportions for men and women did not overlap, overall or by age group (Box 1; Supporting Information, tables 1–4).

Sexual abuse was reported by 1536 women (37.3%; 95% CI, 35.5–39.2%) and 739 men (18.8%; 95% CI, 17.3–20.3%) (Box 1; Supporting Information, table 5). Contact sexual abuse was reported by 1336 women (32.4%; 95% CI, 30.6–34.2%) and 563 men (14.2%; 95% CI, 12.9–15.6%), sexual abuse by an adult family member by 407 women (11.9%; 95% CI, 10.6–13.2%) and 122 men (3.2%; 95% CI, 2.5–3.9%), and contact sexual abuse by adult family members by 351 women (10.5%; 95% CI, 9.3–11.8%) and 97 men (2.6%; 95% CI, 1.9–3.2%) (Supporting Information, tables 5 and 6).

The proportions of the 126 gender-diverse respondents (ninety aged 16–24 years) who reported each type of maltreatment were larger than for other respondents (Box 1).

Prevalence of child maltreatment types, by age

The proportions of respondents aged 65 years or more who reported maltreatment during childhood were smaller than for other age groups, with the exception of sexual abuse. For other age groups, consistent relationships between age group and physical abuse, emotional abuse, neglect, and exposure to domestic violence were not evident (Box 1, Box 2).

The proportion of respondents aged 16–24 years who reported physical abuse (987 people, 28.2%; 95% CI, 26.6–29.9%) was smaller than for all other age groups (range, 33.2–36.0%), with the exception of people aged 65 years or more (26.0%; 95% CI, 23.0–29.0%). The proportion of respondents aged 16–24 years who reported sexual abuse (889 people, 25.7%; 95% CI, 24.1–27.3%) was slightly smaller than for other age groups (range, 27.4–30.7%), with the exception of people aged 65 years or more (Box 1, Box 2), chiefly because the proportions reporting non-contact abuse or abuse by adult family members were smaller (Supporting Information, table 6).

The proportions of respondents aged 16–24 years who reported emotional abuse, neglect, or exposure to domestic violence were similar to those for other age groups; the proportion reporting physical abuse was smaller than for people aged 25–34 years (28.2% [95% CI, 26.6–29.9%] *v* 36.0% [95% CI, 32.7–39.3%]), and the proportion reporting sexual abuse was smaller than for people aged 35–44 years (25.7% [95% CI, 24.1–27.3%] *v* 30.3% [95% CI, 27.1–33.5%]) (Box 1, Box 2).

Discussion

The ACMS provides the first national prevalence estimates for all five forms of child maltreatment before the age of 18 years in Australia. We found that child maltreatment has been a serious problem in Australia for many decades, and continues to be so. Substantial proportions of respondents reported physical abuse (32.0%), sexual abuse (28.5%), or emotional abuse (30.9%)

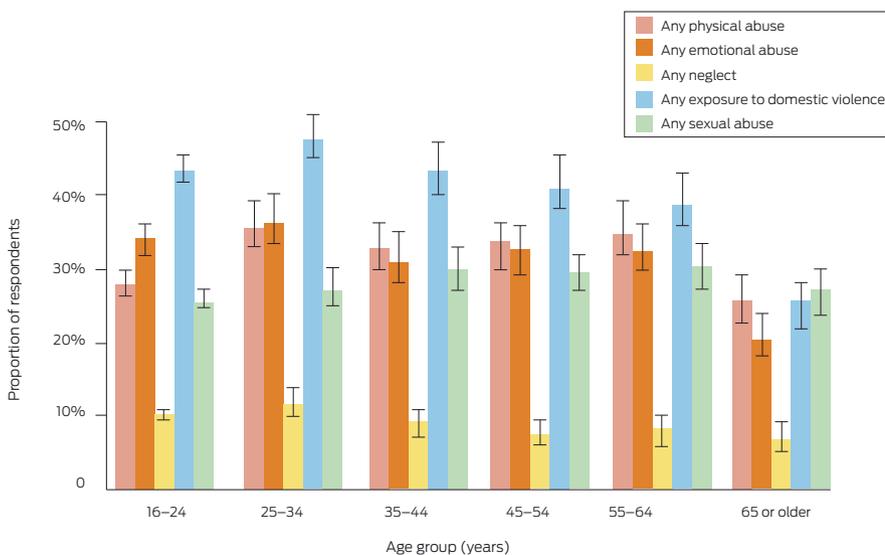
during childhood, and nearly four in ten people (39.6%) reported exposure to domestic violence. Strengths of the ACMS include its large representative sample, extensive testing and validation of the adapted version of the JVQ-R2,²² conceptual rigour, and comprehensiveness. Follow-up questions indicated that maltreatment experiences were not isolated events (Supporting Information, table 7), further bolstering the robustness of our findings.

Our findings are consistent with other research indicating that maltreatment is far more prevalent than the cases known to government agencies.^{32,33} State and territory-based government child protection agencies report maltreatment in different ways, but analyses of aggregated data indicate that a mean 0.86% of people aged 0–17 years were the subjects of substantiated reports of mistreatment each year during 2015–2020, and that about 3.0% received some type of child protection.³³ We examined a broader range of maltreatment than typically comes to the attention of these agencies, suggesting substantial unmet need for immediate assistance and support for people experiencing long term harm. Our findings are important for informing responses by health services, educational and welfare systems, and coordinated public health policy and prevention activities. Further analyses of our data — multi-type maltreatment and risk profiles,³⁴ and mental health outcomes,³⁵ health risk behaviours,³⁶ and health service use associated with child maltreatment³⁷ — are reported in other articles in this supplement.

We assessed the five types of maltreatment across childhood to age 18 years with an established instrument supplemented by additional validated questions in an unusually comprehensive approach by international standards.⁸ Our estimated prevalence of physical abuse during childhood (32.0%) is higher than found by a global meta-analysis (22.6%),⁵ but similar to that of a Canadian study (26.1%; 21.3% of women, 31.0% of men).²⁸ Our estimate for emotional abuse (30.9%; 35.6% of women, 25.4% of men) is lower than found by a global meta-analysis of self-report studies (36.3%),⁷ but may be more reliable than that from a British study based on responses to a single survey question (6.9%).⁹ Our estimate for neglect (8.9%; 10.8% of women, 6.7% of men), is lower than found by the British study (16%), which used a broad range of additional, seldom used items.⁹ Our estimate for exposure to domestic violence (39.6%; 40.8% of women, 38.0% of men) is higher than found by the British study based on different survey items (23.7%).⁹

Our estimate for sexual abuse (28.5%; 37.3% of women, 18.8% of men) is similar to that of the United Kingdom study, based on similar survey items (24.1%).⁹ It is also similar to rates reported by other Australian studies: sexual abuse during childhood was reported by 35% of women in a 1994 survey,³¹ and by 25.2% of participants (30.6% of women, 19.3% of men) in the 21-year follow-up of a 1980s cohort study in Queensland;³² in a national 2000 telephone survey, non-penetrative sexual abuse was reported by 33.6% of women and 15.9% of men, penetrative sexual abuse by 12% of women and 4% of men.¹¹ Our estimated prevalence of sexual abuse by adult family members (7.8%),

2 Overview of reported prevalence of maltreatment during childhood (with 95% confidence intervals), by maltreatment type*



* The raw numbers underlying the listed proportions are included in the Supporting Information, tables 1–5. Proportions are weighted by age group, gender, Indigenous status, country of birth (Australia or overseas), highest educational level, and residential socio-economic status (Relative Socio-economic Advantage and Disadvantage quintiles).¹⁶ ◆

about one-third of all sexual abuse, is novel but consistent with most sexual abuse being inflicted by adults and adolescents known to the child. We plan to further analyse ACMS data to determine the prevalence of sexual abuse by people within and beyond families and institutions.

In our study, larger proportions of women than of men reported neglect and emotional abuse during childhood, and twice as many women as men reported sexual abuse. The reported prevalence of physical abuse and exposure to domestic violence was similar for women and men. These findings are similar to those of American studies that found rates of emotional¹⁸ and sexual abuse³⁸ were higher for girls, and that rates of physical abuse were similar for both sexes.¹⁸ A Canadian study, however, found that physical abuse was more frequently reported by men (31.0% *v* 21.3%).²⁸ Taken together, our findings indicate substantial differences in prevalence by gender, and special efforts are required to prevent the sexual and emotional abuse of girls.

Reported rates of each maltreatment type were higher for gender-diverse than other participants, but this finding should be interpreted with caution given the small number of gender-diverse respondents. Further, we had no information about important aspects of gender-diverse identification; for example, we cannot determine whether emotional abuse was related to parental reactions to their child's expression of their identity. These aspects will be examined in a separate analysis of the ACMS data.

Maltreatment prevalence by age group is infrequently reported, as study designs often preclude such analysis (eg, one-off rather than serial studies). Small, recent declines in the prevalence of non-penetrative sexual abuse of boys and of penetrative sexual abuse of boys and girls have been reported in Australia,¹¹ and a decline in sexual abuse has been reported in the United States.^{18,38} We found that smaller proportions of respondents aged 16–24 years reported physical abuse and, to a lesser extent, sexual abuse, but this did not apply to emotional abuse, neglect, or exposure to domestic violence. These findings suggest that the prevalence of physical and sexual abuse have recently declined, probably influenced by changes in policy, practice, social sensitisation, education, and parenting practices in Australia. Reducing the prevalence of other maltreatment types by the same means is possible.

Limitations

The participation rate for contacted eligible people was only 14.0%, but the demographic characteristics and health behaviours of the sample were broadly similar to those of the Australian population aged 16 years or more in 2016. Statistical weighting did not markedly influence our prevalence estimates, but ensured that they were reliable for generalising to the national population. The retrospective design entails risks of recall inaccuracy, especially for events during early childhood,

which may lead to underestimating prevalence. Further, some maltreatment may have been forgotten or reframed as normal,³² leading to underestimation of prevalence, particularly by respondents aged 65 years or more. Another limitation was that participants aged 16 or 17 years could not provide information about events to age 18 years; however, 3122 respondents in the 16–24 year age group (89%) were 18–24 years old.

Conclusions

Physical abuse, sexual abuse, emotional abuse, and exposure to domestic violence during childhood are common in Australia. Larger proportions of women than of men reported childhood sexual abuse, emotional abuse, and neglect. Recent declines in reported physical and sexual abuse suggest that public health initiatives can reduce the prevalence of maltreatment. These declines justify policy and prevention strategies that aim to further reduce the prevalence of these maltreatment types, and support efforts to reduce emotional abuse and exposure to domestic violence, which have received less attention than physical and sexual abuse. Monitoring in further regular studies can be used to assess changes in prevalence in Australia, facilitating comparison by age group³⁸ and review of the impact of policy and prevention activities.

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Supporting Information

Additional Supporting Information is included with the online version of this article.

The prevalence and nature of multi-type child maltreatment in Australia

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The known: Although we know that child maltreatment is common, we know little about the prevalence of exposure to multiple forms of maltreatment (physical abuse, emotional abuse, sexual abuse, neglect, and exposure to domestic violence).

The new: To our knowledge, this is the first time that a population-representative study of all five child maltreatment types has been conducted. Australian children experienced multi-type maltreatment more often than a single type (39.4% v 22.8%). Almost one-quarter (23.3%) experienced three to five maltreatment types, and 3.5% experienced all five types. A common multi-type maltreatment combination involves exposure to domestic violence, emotional abuse and physical abuse. Broader family-related adverse experiences almost doubled the risk of multi-type maltreatment.

The implications: Prevention, protection and treatment services must coordinate to promote safety and recovery from multi-type maltreatment. Public health prevention measures must employ broad strategies addressing multi-type maltreatment, particularly targeting women and gender diverse individuals.

Different forms of child maltreatment — physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence — are associated with substantial adverse effects throughout life on mental health, physical health and health risk behaviour.^{1,2} However, most research considers bilateral relationships between an individual maltreatment type and measures of wellbeing. Unless the totality of a person's experience of different types of maltreatment is measured, researchers and clinicians may misattribute outcomes to one type of maltreatment. Further, outcomes attributed to individual maltreatment types cannot simply be added to understand the consequences of multiple forms of maltreatment.

This insight, together with clinical understanding of victim-survivors' lived experience, underpinned the conceptualisation of exposure to multiple forms of child maltreatment and its consequent harms as "multi-type maltreatment".^{3,4} Some studies suggest that multi-type maltreatment is common.^{5,6} One of the first comprehensive analyses of multiple forms of child maltreatment in the United States examined it as a subset of other childhood victimisation experiences such as bullying and community violence.⁷ In a convenience sample examining four types of child maltreatment in 2292 children (aged 5–13 years), 23.9% reported two to four maltreatment types.⁸ In a random sample of children in the US, 56.8% of those who witnessed family violence experienced another type of maltreatment, most commonly psychological abuse (38.2%) or physical abuse (31.1%).⁹ Similar patterns have been found in quasi-randomised youth samples in Vietnam and Malaysia.^{10,11} A recent systematic review

Abstract

Objectives: To determine the prevalence in Australia of multi-type child maltreatment, defined as two or more maltreatment types (physical abuse, sexual abuse, emotional abuse, neglect, or exposure to domestic violence) and to examine its nature, family risk factors, and gender and age cohort differences.

Design: Retrospective cross-sectional survey using a validated questionnaire.

Setting and participants: Mobile phone random digit-dial sample of the Australian population aged 16 years and older.

Main outcome measures: National estimates of multi-type child maltreatment up to age 18 years using the Juvenile Victimization Questionnaire-R2: Adapted Version (Australian Child Maltreatment Study).

Results: Of 8503 participants, 62.2% (95% CI, 60.9–63.6%) experienced one or more types of child maltreatment. Prevalence of single-type maltreatment was 22.8% (95% CI, 21.7–24.0%), whereas 39.4% (95% CI, 38.1–40.7%) of participants reported multi-type maltreatment and 3.5% (95% CI, 3.0–4.0%) reported all five types. Multi-type maltreatment was more common for gender diverse participants (66.1% [95% CI, 53.7–78.7%]) and women (43.2% [95% CI, 41.3–45.1%]) than for men (34.9% [95% CI, 33.0–36.7%]). Multi-type maltreatment prevalence was highest for those aged 25–44 years. Family-related adverse childhood experiences — especially mental illness and alcohol or substance misuse — increased risk. Exposure to domestic violence was the maltreatment type most often present in multi-type maltreatment patterns.

Conclusions: Multi-type child maltreatment is prevalent in Australia and more common in women and gender diverse individuals. Child protection services, health practitioners, and prevention and intervention services must assess and manage multi-type maltreatment in children and address its health consequences across the lifespan. Public health policy should consider prevention services or strategies that target multi-type child maltreatment.

of research on child maltreatment in China emphasised the predominance of studies on single or few types of maltreatment, and the paucity of research on multi-type maltreatment.¹²

In Australian research conducted using a non-representative community sample, half of participants who experienced any type of maltreatment also reported at least one other type.³ A recent study pooled various data sources in Australia to estimate the proportion of maltreated individuals where there was co-occurrence (looking at four types of maltreatment, excluding exposure to domestic violence). They found very high proportions of co-occurrence, ranging from 57.1% for sexual abuse to 91.0% for emotional abuse, indicating that multi-type maltreatment is the more typical experience of child maltreatment than single type.¹³ A meta-analysis of co-occurrence rates of

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family victimisation found significantly higher rates among the clinical population (36.0%) than the general population (9.7%).¹⁴ Although recent studies have assessed health outcomes such as pre-pregnancy obesity and found them significantly related to various types of child maltreatment, the risk for those who have experienced multi-type maltreatment is not known.¹⁵

Despite its importance for policy and clinical practice, longstanding gaps in the international evidence base persist.^{5,6} Our understanding of the prevalence and nature of multi-type maltreatment at the population level and the associated health outcomes is limited.^{16,17} A recent systematic review identified only one study that considered all five types of maltreatment, but the study used a non-representative sample of 358 children.^{6,18} This review also found pronounced gaps in evidence relating to multi-type maltreatment involving emotional abuse and exposure to domestic violence.⁶ To our knowledge, no study to date has ascertained the prevalence, nature and associated family-related risk factors for multi-type child maltreatment (up to age 18 years) of all five forms in a population-representative sample.

The Australian Child Maltreatment Study (ACMS) conducted a national survey of a random sample of the population aged 16 years and older, and found that each form of maltreatment is common. Prevalence rates were: neglect, 8.9%; sexual abuse, 28.5%; emotional abuse, 30.9%; physical abuse, 32.0%; and exposure to domestic violence, 39.6%.^{19,20} In this article, we build on those findings, with the aims of establishing the first source of evidence on the prevalence in Australia of any multi-type maltreatment and different multi-type maltreatment combinations, and identifying gender and age-group differences. Accordingly, we examine three research questions:

- What is the prevalence of multi-type maltreatment?
- What is the prevalence of experiencing different combinations of maltreatment domains?
- What family-related adverse childhood experiences are associated with great risk of single-type and multi-type maltreatment?

Method

Participants

As detailed elsewhere in this supplement, we recruited a representative sample of Australians aged 16 years and older by random digit-dial via an advance text message inviting participation, with a follow-up phone call.²¹ We asked participants to describe their gender. Interviewers were able to code responses against 13 categories or transcribe verbatim any other response. As well as using data for women and men, we collapsed all other responses into the category of diverse genders.

Outcome measures

We administered the Juvenile Victimization Questionnaire-R2: Adapted Version (Australian Child Maltreatment Study). The 16 screener items measured all five types of child maltreatment up to age 18 years, as defined in the ACMS protocol and further explained elsewhere in this supplement.^{19,22} The questionnaire also included questions about other adverse childhood experiences, including four family-related risk factors: parental separation or divorce; living with someone who was mentally ill, suicidal or severely depressed; living with someone who had a problem with alcohol or drugs; and family economic hardship.²¹

We selected these risk factors for analysis for several reasons. First, each is common enough to provide usable data, compared with others such as parental incarceration. Second, they are supported in the literature as associated with individual maltreatment types in a more robust manner than other adverse childhood experiences, and we deemed it important to assess their association with multi-type maltreatment in this analysis. Third, they are significant scientifically and relevant for policy because they are more readily modifiable than some other adverse childhood experiences. Fourth, the Adverse Childhood Experiences Scale is acknowledged as not including all relevant adversities,^{22,23} so assessment of all its standard items would be subject to limitations.

Statistical analysis

We calculated survey-weighted prevalence (with 95% confidence intervals) of physical abuse, sexual abuse and exposure to domestic violence, based on positive endorsement of any of the screener items for these maltreatment types, regardless of how many times the experience happened. For emotional abuse and neglect, we calculated prevalence only if the experience occurred over a period of weeks, months or years.²⁰

We defined multi-type maltreatment as the experience of two or more of the five child maltreatment types across childhood and adolescence. There are 26 potential multi-type maltreatment combinations: experiences of two types (ten combinations), three types (ten combinations), four types (five combinations) or all five types. We split the sample into three mutually exclusive groups: no maltreatment, single-type maltreatment, and multi-type maltreatment. The multi-type maltreatment group was further divided into the number of maltreatment types experienced (two, three, four or five). We also made comparisons by age group: the youngest cohort (participants aged 16–24 years), the middle cohort (collapsed data for participants aged 25–34 and 35–44 years), and the oldest cohort (collapsed data for participants aged 45–54, 55–64 and ≥ 65 years).

To measure associations between family-related adverse childhood experiences and multi-type maltreatment, we considered participants' experiences of the four selected family-related risk factors. For each of these, we calculated the relative risk (RR) and 95% confidence interval, comparing each maltreatment grouping with all others: no maltreatment was compared with one type and with two or more types; one type was compared with no maltreatment and with two or more types; and two or more types was compared with no maltreatment and with one type. We calculated RRs using log binomial regression, accounting for the survey weights. We did not consider the contribution of potential confounders as it was beyond the scope of the study and would have required a separate detailed analysis. Our primary goal was to consider the presence of these risk factors in the context of multi-type maltreatment, which involved a novel analysis of the interplay between a substantial number of combinations of maltreatment types and family-related adverse childhood experiences.

All analyses were conducted using SAS 9.4 or Stata 17.0. Two of us (DMH and DL) randomly spot-checked the SAS coding and results in SPSS 27.

Ethics approval

The Queensland University of Technology Human Research Ethics Committee approved the study (1900000477). Participants gave informed consent.

Results

Prevalence of multi-type maltreatment

In total, 8503 participants completed the survey; 3503 were aged 16–24 years, 2000 were aged 25–44 years) and 3000 were aged ≥ 45 years. In this sample, 5280 participants (62.2% [95% CI, 60.9–63.6%]) reported experiencing one or more types of child maltreatment, 3378 participants (39.4% [95% CI, 38.1–40.7%]) reported experiencing any multi-type child maltreatment (ie, 2–5 types), and 286 participants (3.5% [95% CI, 3.0–4.0%]) reported experiencing all five types. Experiencing three types was reported by 1056 participants (11.7% [95% CI, 10.8–12.6%]) and experiencing four types was reported by 694 participants (8.1% [95% CI, 7.4–8.8%]). This meant that 2036 participants (23.3% [95% CI, 22.1–24.4%]) experienced three to five types of child maltreatment and 980 participants (11.6% [95% CI, 10.7–12.4%]) experienced four to five types (Box 1).

More than one-third of participants (3223; 37.8% [95% CI, 36.4–39.1%]) reported no maltreatment. A smaller proportion (1902; 22.8% [95% CI, 21.7–24.0%]) reported only one type of maltreatment, and the highest rates of single-type maltreatment were for exposure to domestic violence (755; 8.4% [95% CI, 7.6–9.1%]) and sexual abuse (518; 6.7% [95% CI, 6.0–7.4%]) (Supporting Information, table 1).

Considering gender differences, the rate of any multi-type maltreatment was substantially higher for women (1852; 43.2%

[95% CI, 41.3–45.1%]) than for men (1437; 34.9% [95% CI, 33.0–36.7%]) and was highest for participants with diverse genders (89; 66.1% [95% CI, 53.7–78.7%]). Women experienced higher prevalence of four and five types of multi-type maltreatment compared with men (eg, five types: 196; 4.7% [95% CI, 3.9–5.5%] v 77; 2.0% [95% CI, 1.5–2.6%]), and these rates were higher still for participants identifying with diverse genders.

Considering age group differences, the middle cohort (25–44 years) had the highest prevalence of any multi-type maltreatment (854; 44.0% [95% CI, 41.6–46.4%]), followed by the youngest cohort (16–24 years) (1400; 40.2% [95% CI, 38.4–42.0%]) and then the oldest cohort (≥ 45 years) (1124; 36.0% [95% CI, 34.1–37.9%]) (Box 1, Box 2). In the youngest cohort, 12.3% (412 participants) experienced four to five maltreatment types and 25.4% (866 participants) experienced three to five types; this is comparable to the middle cohort, in which 13.4% (257 participants) experienced four to five types and 25.7% (502 participants) experienced three to five types. The rate of no maltreatment was highest for the oldest cohort (1173; 40.5% [95% CI, 38.5–42.4%]), lower for the youngest cohort (1368; 38.8% [95% CI, 37.0–40.6%]) and lowest for the middle cohort (682; 33.4% [95% CI, 31.2–35.7%]) (Box 1).

Prevalence of different maltreatment domain combinations

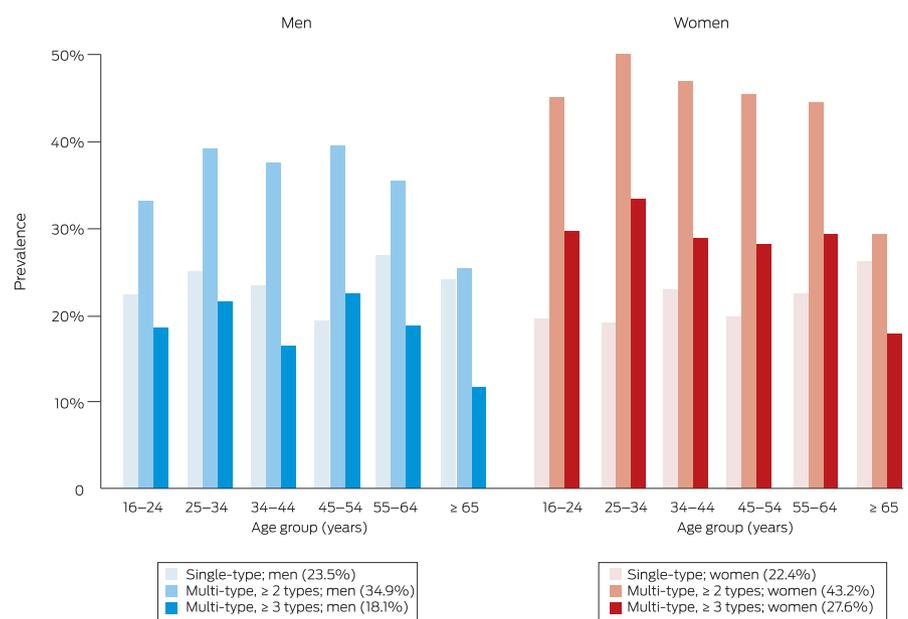
To consider the nature of the experience of multi-type child maltreatment, we examined all 26 possible combinations of the experienced maltreatment types (Box 3, Box 4; Supporting

1 Prevalence of multi-type maltreatment by number of maltreatment types, and by gender and age cohort (N = 8503)

Participants — number; percentage (95% CI)

	No maltreatment	One type of maltreatment	Any multi-type maltreatment (≥ 2 types)	Two types of maltreatment	Three types of maltreatment	Four types of maltreatment	Five types of maltreatment
All ages	3223; 37.8% (36.4–39.1%)	1902; 22.8% (21.7–24.0%)	3378; 39.4% (38.1–40.7%)	1342; 16.1% (15.1–17.1%)	1056; 11.7% (10.8–12.6%)	694; 8.1% (7.4–8.8%)	286; 3.5% (3.0–4.0%)
Women	1402; 34.5% (32.6–36.3%)	928; 22.4% (20.7–24.0%)	1852; 43.2% (41.3–45.1%)	668; 15.6% (14.2–17.0%)	567; 12.7% (11.4–13.9%)	421; 10.2% (9.1–11.4%)	196; 4.7% (3.9–5.5%)
Men	1804; 41.6% (39.7–43.5%)	954; 23.5% (21.8–25.1%)	1437; 34.9% (33.0–36.7%)	656; 16.7% (15.2–18.2%)	461; 10.5% (9.4–11.7%)	243; 5.6% (4.7–6.4%)	77; 2.0% (1.5–2.6%)
Diverse genders	17; 18.5% (7.2–29.7%)	20; 15.4% (6.7–24.1%)	89; 66.1% (53.7–78.7%)	18; 15.0% (5.3–24.6%)	28; 17.7% (9.0–26.4%)	30; 21.1% (11.4–30.7%)	13; 12.4% (3.6–21.2%)
16–24 years	1368; 38.8% (37.0–40.6%)	732; 21.0% (19.5–22.5%)	1400; 40.2% (38.4–42.0%)	534; 14.8% (13.5–16.1%)	454; 13.1% (11.8–14.4%)	285; 8.6% (7.5–9.6%)	127; 3.7% (3.0–4.4%)
Women	565; 34.5% (31.9–37.0%)	340; 19.9% (17.8–22.1%)	757; 45.6% (42.9–48.3%)	267; 15.4% (13.5–17.3%)	237; 14.0% (12.2–15.9%)	163; 10.5% (8.9–12.2%)	90; 5.6% (4.4–6.8%)
Men	794; 44.5% (41.9–47.1%)	397; 22.4% (20.2–24.7%)	575; 33.0% (30.6–35.5%)	254; 14.4% (12.6–16.2%)	194; 11.5% (9.8–13.2%)	99; 5.7% (4.5–6.9%)	28; 1.4% (0.9–2.0%)
25–44 years	682; 33.4% (31.2–35.7%)	464; 22.5% (20.5–24.5%)	854; 44.0% (41.6–46.4%)	352; 18.3% (16.4–20.2%)	245; 12.3% (10.7–13.8%)	178; 9.0% (7.6–10.4%)	79; 4.4% (3.4–5.5%)
Women	294; 29.6% (26.5–32.8%)	223; 21.2% (18.4–24.0%)	469; 49.2% (45.7–52.6%)	170; 17.6% (14.9–20.2%)	130; 13.1% (10.8–15.4%)	117; 12.4% (10.1–14.7%)	52; 6.2% (4.4–7.9%)
Men	385; 37.5% (34.2–40.9%)	237; 24.1% (21.1–27.1%)	370; 38.4% (35.0–41.7%)	179; 19.2% (16.4–22.0%)	110; 11.3% (9.0–13.5%)	57; 5.5% (4.0–7.0%)	24; 2.4% (1.4–3.5%)
≥ 45 years	1173; 40.5% (38.5–42.4%)	706; 23.5% (21.8–25.2%)	1124; 36.0% (34.1–37.9%)	456; 14.9% (13.5–16.3%)	357; 11.0% (9.7–12.2%)	231; 7.3% (6.3–8.4%)	80; 2.8% (2.1–3.4%)
Women	543; 37.6% (34.8–40.3%)	365; 23.7% (21.3–26.1%)	626; 38.7% (36.0–41.5%)	231; 14.3% (12.4–16.2%)	200; 12.1% (10.3–13.9%)	141; 8.8% (7.2–10.4%)	54; 3.5% (2.5–4.5%)
Men	625; 43.8% (41.0–46.7%)	338; 23.4% (20.9–25.8%)	492; 32.8% (30.1–35.5%)	223; 15.5% (13.4–17.6%)	157; 9.8% (8.1–11.4%)	87; 5.6% (4.3–6.9%)	25; 1.9% (1.1–2.7%)

2 Prevalence of single-type maltreatment and multi-type maltreatment (≥ 2 or ≥ 3 types), by age for men and women*



* Each percentage in parentheses is the proportion of the entire sample of men or women that falls into that category (eg, 23.5% of all surveyed men experienced single-type maltreatment).

Information, tables 2–4). An estimated 719 500 Australians aged 16 years and older have experienced all five types of child maltreatment, representing 3.5% of the population (Box 3). Exposure to domestic violence occurred in all six of the most reported combinations (Box 4); in all possible combinations, it was experienced by an estimated 6 455 327 Australians (31.2%), but it was less frequently experienced alone (an estimated 1 727 300 Australians; 8.4%) (Supporting Information, table 1). Physical abuse and emotional abuse each featured in four of the six most reported combinations (all with ≥ 3% prevalence) (Box 4). Sexual abuse featured in three of the six most reported combinations, but neglect in only one (Box 4). Age-group differences in the prevalence of multi-type maltreatment were largely consistent with the overall trends when looking at each combination of child maltreatment types separately (Supporting Information, tables 2–4).²⁰

Associations between family-related risk factors and child maltreatment

For all four family-related risk factors, there was a consistently increased risk of multi-type (but not single-type) maltreatment for participants with these risk factors compared with those without these risk factors (Supporting Information, tables 5–8). Overall, 16.4% of participants (1502) reported multi-type maltreatment and parental separation or divorce (RR, 2.01 [95% CI, 1.89–2.14]) (Supporting Information, table 5); 16.1% (1535) reported multi-type maltreatment and living with someone who was mentally ill, suicidal or severely depressed (RR, 2.42 [95% CI, 2.28–2.57]) (Supporting Information, table 6); 16.2% (1407) reported multi-type maltreatment and living with someone who had a problem with alcohol or drugs (RR, 2.40 [95% CI, 2.26–2.55]) (Supporting Information, table 7); and 14.8% (1181) reported multi-type maltreatment and family economic hardship (RR, 2.18 [95% CI, 2.06–2.32]) (Supporting Information, table 8). For each family-related risk factor, presence of the risk factor was associated with

more than double the risk of multi-type maltreatment compared with absence of the risk factor.

Patterns were similar for women and men, and risks were even higher for participants with a diverse gender identity. Comparing age groups, the prevalence of experiencing family-related risk factors and multi-type maltreatment was highest for the middle cohort (25–44 years), compared with the youngest and oldest cohorts (16–24 and ≥ 45 years) (Supporting Information, tables 5–8).

Discussion

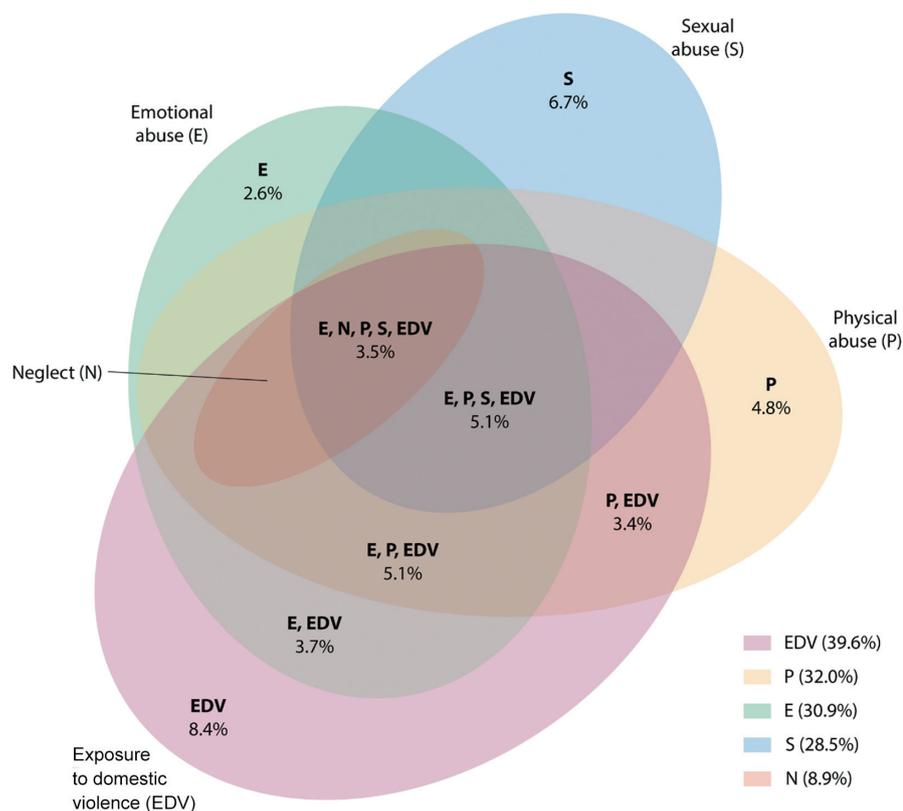
To our knowledge, the ACMS is the first study globally to examine combined exposure to all five specific domains of child maltreatment in a representative sample. Elsewhere in this supplement, we report the prevalence rates for each type of maltreatment, ranging from 8.9% (neglect) to 39.6% (exposure to domestic violence).²⁰ The current analysis of multi-type maltreatment presents an important additional, and concerning, understanding of the experience of

child maltreatment in Australia. Although more than one-third of participants (37.8%) did not experience any type of child maltreatment, two in five (39.4%) experienced multi-type maltreatment, nearly one-quarter (23.3%) experienced three to five types, and more than one in ten (11.6%) experienced four to five types. Among participants aged 16–24 years, prevalence of any multi-type maltreatment was slightly higher than for the whole sample, indicating that these experiences are not simply historical artefacts but reflect contemporary social trends that have major implications for public health policy and clinical practice.

Elsewhere in this supplement, we report that although women and men experience comparable rates of physical abuse and exposure to domestic violence, women experience higher rates of neglect, emotional abuse and, particularly, sexual abuse.²⁰ We found similar trends for multi-type maltreatment, with women being significantly more vulnerable than men (43.2% v 34.9%), and even higher vulnerability among Australians with diverse gender identities (66.1%). Across age groups, women were consistently more likely to have experienced multi-type maltreatment. Although the youngest cohort of participants reported lower prevalence of physical abuse and specific subdomains of sexual abuse — suggesting that Australian society may have benefitted in recent decades from advances in policy, practice, social sensitisation, education and healthy parenting²⁰ — this was not replicated in multi-type maltreatment data for this cohort. This suggests exposure to multi-type maltreatment may offset declines in individual maltreatment types. In addition, the high prevalence of multi-type maltreatment in participants with a diverse gender identity (mostly in the youngest cohort) warrants specific focus on prevention and intervention strategies.

Across all possible multi-type maltreatment combinations, those involving exposure to domestic violence were experienced by almost one in three Australians. This suggests the need for an important shift in the narrative around exposure to domestic violence, to consider it as a ubiquitous environmental pattern

3 Prevalence of the five most common combinations of multi-type maltreatment, and of single-type maltreatment, showing the main patterns of overlap in multi-type maltreatment combinations*



* Percentages at bottom right show overall prevalence of each maltreatment type.

separation or divorce. Our findings regarding multi-type maltreatment risk align with those found in a 27-year birth cohort study in Victoria²⁵ — namely that economic disadvantage, poor parental mental health, parental substance misuse and social instability are associated with increased risk of maltreatment. Further analyses are required to determine whether known risk factors for child maltreatment can help differentiate between the occurrence of single-type and multi-type maltreatment, and to indicate suitable points of intervention.

Our findings reinforce the importance of statistically adjusting for multi-type maltreatment to avoid overestimating the health and social effects when looking at associations with any single type of child maltreatment alone.⁹⁻¹⁴ Understanding the overlap between different types of maltreatment changes our understanding of the nature of individual maltreatment types. Knowing that there is a high likelihood of each type being experienced in combination with other types, rather than in isolation, could affect the approaches to prevention and clinical intervention in response to an identified maltreatment type.

Our findings suggest that not only is the true prevalence of maltreatment far higher than the proportion of cases coming to the attention of government agencies, but that for the many

that is evident in almost a third of the population. Physical and emotional abuse also contributed strongly to these experiences, indicating a need for enhanced prevention of these maltreatment types, particularly in high risk families. In contrast, neglect seldom featured in the most common multi-type maltreatment combinations. This contrasts with neglect being one of the more frequent harm types in children coming to the attention of statutory child protection authorities in Australia.²⁴

Consistent with findings from studies conducted overseas,¹⁶ we found strong associations between multi-type maltreatment and four family-related risk factors. In descending order of risk, they were: living with someone who was mentally ill, suicidal or severely depressed; living with someone who had a problem with alcohol or drugs; experiencing family economic hardship; and parental

Australians experiencing any form of child maltreatment (62.2%), the typical experience is of multi-type maltreatment. Statutory child protection services and family support agencies need to consider the likelihood of multi-type maltreatment. Equally, although we need to be careful about the expansion of screening without well tested tools, protocols and prepared interventions,²² health practitioners and mental health service providers should consider multi-type maltreatment when engaged in clinical assessment and intervention, providing trauma-informed therapeutic services that are designed to address the high likelihood that child maltreatment victims have been exposed to multi-type maltreatment. Current public health prevention strategies need to move beyond singular maltreatment foci, and instead assess and manage the likelihood of experiencing multiple domains of child

4 The six most commonly reported combinations of multi-type child maltreatment (≥ 3% prevalence)

Prevalence	Exposure to domestic violence	Emotional abuse	Physical abuse	Sexual abuse	Neglect
5.1%	✓	✓	✓	✓	
5.1%	✓	✓	✓		
3.7%	✓	✓			
3.5%	✓	✓	✓	✓	✓
3.4%	✓		✓		
3.0%	✓			✓	

maltreatment, and the family-related adverse childhood experiences such as poor parental mental health that increase the risk of multi-type maltreatment.

Given that our prevalence estimates suggest that the experience of multi-type maltreatment is almost twice as common as the experience of single-type maltreatment (39.4% *v* 22.8%), prevention, protection and treatment services must coordinate interventions to respond to multi-type maltreatment. Consideration should be given to the role of universal prevention programs and strategies aimed at a range of maltreatment types that children and adolescents experience, and the modifiable family-related adversities that increase the likelihood of both single-type and multi-type maltreatment.

Strengths and limitations

The ACMS captured nuanced representative population data about the experience of all five types of child maltreatment, enabling the identification of individuals most at risk — not only of each individual type of maltreatment, but also of multi-type maltreatment in its different combinations. This knowledge is essential to develop evidence-informed child protection policies, prevention strategies and interventions. Analysis of multi-type maltreatment also enables assessment of its associations with mental health disorders, health risk behaviour and service use data, which are reported elsewhere in this supplement.²⁶⁻²⁸ Forthcoming analyses will examine differences in associated outcomes attributable to variability in age of onset, developmental periods of victimisation, chronicity, and particular multi-type maltreatment combinations.

Cross-sectional retrospective data do not allow ascertainment in all cases of the sequential timing and directionality of different types of maltreatment. Many children may experience multiple types of maltreatment in the same event, or at proximate times in childhood. However, the ACMS did capture data about age of onset and cessation for each type of maltreatment experienced. Although further analysis can examine the nature of developmental victimisation and its association with health and behavioural outcomes, we cannot be certain in all cases about the temporal progression of different maltreatment types. In addition, although major risk factors were examined in this analysis, not all possible family-related risk factors were assessed. Further research should address the combined influence of multiple family-related risk factors and other childhood adversities on the likelihood of experiencing multi-type maltreatment and its associated outcomes.

Conclusions

Multi-type maltreatment is common and is the typical experience of Australians who experience any childhood maltreatment — it is almost twice as common as experiencing single-type

maltreatment. Compared with single-type maltreatment, women are significantly more likely than men to have experienced multi-type maltreatment, and people with a diverse gender identity are even more vulnerable. Exposure to domestic violence is the most prevalent individual maltreatment type, and features across the most frequent multi-type maltreatment combinations. The relative risk of multi-type maltreatment for individuals who have experienced other types of family-based adversity (residing with someone with mental health problems or substance misuse problems, economic disadvantage, and parental separation or divorce) suggests that family supports could be an important prevention strategy for the most prevalent experience of child abuse and neglect: multi-type maltreatment. Future studies with new youth samples could help establish whether the prevalence of multi-type maltreatment is changing, and determine whether policy and prevention efforts to address risks of individual maltreatment types can be integrated to address risk of multi-type maltreatment.

Data access: The authors had full access to all the data (including statistical reports and tables).

Data sharing statement: Under a registered data management plan, final datasets will be stored on the Australian Data Archive, with details for access from 2024 made available on the ACMS website (<https://www.acms.au>). Under a multi-institutional agreement, the survey instrument is the intellectual property of the research team. It will be made available through a Creative Commons licence after an embargo period. For the purpose of open access, we have applied a Creative Commons Attribution (CC BY) license to any author-accepted manuscript version arising from this submission.

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Supporting Information

Additional Supporting Information is included with the online version of this article.

The association between child maltreatment and mental disorders in the Australian Child Maltreatment Study

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The known: Child maltreatment is associated with increased risk of mental disorders.

The new: To our knowledge, this is the most comprehensive assessment of the relationship between childhood maltreatment and mental disorders in Australia to date. Children who are emotionally abused, sexually abused or exposed to multi-type maltreatment are at particularly high risk of mental disorders. The prevalence of common mental disorders is relatively low in people who were not maltreated during childhood. Associations between child maltreatment and mental disorders remained significant after adjustment for sociodemographic factors.

The implications: Prevention of child maltreatment is critical to achieve a meaningful reduction in the prevalence of mental disorders.

In Australia, mental disorders and substance use disorders are the leading causes of non-fatal disease burden, accounting for almost one-quarter of years lived with disability.¹ The National Survey of Mental Health and Wellbeing, which collected data between December 2020 and July 2021, showed that more than two in five Australians (43.7%) had experienced a mental disorder during their lifetime, with major depressive disorder (MDD), anxiety disorders, post-traumatic stress disorder (PTSD) and alcohol use disorders (AUDs) being highly prevalent.² Addressing modifiable risk factors for mental disorders may reduce their prevalence and associated morbidity.³

Maltreatment in childhood is a well established risk factor for mental illness across the lifespan.⁴ Although studies have shown that people who experience child maltreatment — defined as physical abuse, emotional abuse, sexual abuse, neglect or exposure to domestic violence before 18 years of age — have a 2–3-fold increased risk of mental health problems,^{4,5} research in this field has common limitations. Assessments of child maltreatment have used a wide range of definitions and are typically restricted to a limited number of maltreatment types. Further, assessments of mental illness commonly involve symptom scales rather than diagnostic instruments.⁶ These limitations result in variability in the strength of reported associations. In addition, although children often experience multi-type maltreatment,⁷ few studies examining associations between one type of maltreatment and mental illness adjust for other forms of maltreatment,⁸ potentially leading to an overestimation of the strength of associations. Similarly, most studies do not assess the association between experiences of multi-type child maltreatment and mental disorders.

Abstract

Objectives: To examine the associations between experiences of child maltreatment and mental disorders in the Australian population.

Design: Population-representative survey conducted by computer-assisted telephone interviewing.

Setting, participants: Australian residents aged 16 years and older.

Main outcome measures: Mental disorder diagnoses of lifetime major depressive disorder, current alcohol use disorder (mild, moderate and severe), current generalised anxiety disorder and current post-traumatic stress disorder.

Results: More than one in three Australians (3606/8503 surveyed participants; 38.0%; 95% CI, 36.7–39.3%) met the diagnostic criteria for a mental disorder. The prevalence of mental disorders in non-maltreated participants was 21.6% (95% CI, 19.9–23.3%; $n = 851$). This increased to 36.2% (95% CI, 33.5–38.9%; $n = 764$) for those who experienced a single type of maltreatment and 54.8% (95% CI, 52.6–56.9%; $n = 1991$) for participants who experienced multi-type maltreatment. Compared with non-maltreated Australians, maltreated participants had about three times the odds of any mental disorder (odds ratio [OR], 2.82; 95% CI, 2.47–3.22), generalised anxiety disorder (OR, 3.14; 95% CI, 2.48–3.97), major depressive disorder (OR, 3.19; 95% CI, 2.68–3.80) and severe alcohol use disorder (OR, 2.62; 95% CI, 1.83–3.76), and almost five times the odds of post-traumatic stress disorder (OR, 4.60; 95% CI, 3.00–7.07). Associations between experiences of child maltreatment and mental disorders were strongest for sexual abuse, emotional abuse and multi-type maltreatment. The strength of the associations did not differ by gender. Adjustment for childhood and current financial hardship and for current socio-economic status did not significantly attenuate the associations.

Conclusions: Mental disorders are significantly more likely to occur in individuals who experience child maltreatment, particularly multi-type maltreatment. Prevention of child maltreatment provides an opportunity to substantially reduce the prevalence of mental illness and improve the health of the Australian population.

To our knowledge, the Australian Child Maltreatment Study (ACMS) is the first national survey to measure both the prevalence of all five forms of child maltreatment and diagnoses of mental disorders in Australia's population aged 16 years and older.⁹ A detailed explanation of our approach to the conceptual models of each maltreatment type in the ACMS is outlined in our protocol article.⁹ Our operationalisation of these maltreatment types (including their integration within survey items) is explained in our methodology article.¹⁰ In this study, we aimed to estimate the strength of the associations between each form of

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maltreatment and each diagnosis of a common mental disorder in the Australian community. We also aimed to provide national population estimates for common mental disorders.

Methods

Participants

Full details of the methods for the ACMS are described elsewhere in this supplement.¹⁰ In brief, a random sample of Australians aged 16 years and older was recruited via mobile phone by random digit dialling, following an advance text message inviting participation. Data were collected by computer-assisted telephone interviewing, which was conducted by trained lay interviewers. Comparison with Australian census and survey data showed that the weighted data were representative of the Australian population. Ethics clearance was obtained from the Human Research Ethics Committee of Queensland University of Technology (approval number 1900000477) and all participants gave informed consent.

Measures

Child maltreatment was assessed using 16 screener items from the Juvenile Victimization Questionnaire-R2 adapted version (Australian Child Maltreatment Study). These behaviourally specific questions elicited a dichotomous yes-or-no response, identifying whether the participant had experienced any subdomain of each maltreatment type (physical abuse, two subdomains; sexual abuse, four subdomains; emotional abuse, three subdomains; neglect, three subdomains; and exposure to domestic violence, four subdomains [Supporting Information, table 1]). Physical abuse, sexual abuse and exposure to domestic violence were based on positive endorsement of any of the screener items for these maltreatment types, regardless of how many times the experience happened. Neglect and emotional abuse were only counted as positively endorsed if the experiences were reported to have occurred over a period of weeks, months or years.¹¹ In the ACMS, neglect refers to environmental neglect, physical neglect or medical neglect. Emotional unavailability was included in emotional abuse.

In the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5), diagnoses of generalised anxiety disorder (GAD) (current), PTSD (current), AUD (current; mild, moderate and severe) and MDD (lifetime) were established using modules of the Mini International Neuropsychiatric Interview (MINI), version 7.0.2. Measurement of lifetime prevalence was limited to MDD to reduce participant burden. The MINI is a short, structured diagnostic instrument that is valid and reliable,^{12,13} it is administered by trained lay interviewers and is widely used in epidemiological surveys of mental health. Financial hardship during childhood was assessed by asking "How often did your family experience economic hardship such as finding it difficult to provide food, medical care, or other basic necessities?" People were considered to have experienced childhood financial hardship if their response was "somewhat often" or "very often". Current financial strain was assessed by asking "In the past 12 months, has there been a time when your household could not meet essential expenses?" Participants were considered to be experiencing current financial strain if their response was "yes".

Statistical analysis

Missing data were excluded from the analysis. Survey-weighted prevalence rates and 95% confidence intervals for mental disorders were calculated using the method of expansion in

Taylor series.¹⁴ Mental disorder prevalence estimates were then compared by experiences of child maltreatment (no maltreatment, any maltreatment, single type maltreatment and multi-type maltreatment [two or more types]) and by gender.

Survey-weighted logistic regression models were used to examine the associations between experiences of child maltreatment and diagnosis of each mental disorder. The first model calculated the odds ratios (ORs) and 95% confidence intervals (CIs) for experiences of any child maltreatment compared with no child maltreatment. The second model calculated the odds of each mental disorder with experiences of each of the five types of child maltreatment fitted simultaneously as independent binary (yes/no) variables. This enabled associations between each mental disorder and each type of maltreatment to be adjusted for the experiences of other types of maltreatment. Each model was fitted with two levels of adjustment for other factors. The simple adjusted model accounted for age group and gender, while the fully adjusted model also accounted for child maltreatment, socio-economic disadvantage (based on postcode of residence and quintiles of the Index of Relative Socio-Economic Disadvantage [one of the Socio-Economic Indexes for Areas]),¹⁵ financial hardship during childhood, and current financial strain.

Results

In total, 8503 participants completed the survey, and fewer than 1% of data were missing. The survey-weighted national prevalence estimates for mental disorders in Australian residents aged 16 years and older, in those with and without experiences of child maltreatment, are shown in Box 1. More than one in three participants (38.0%; 95% CI, 36.7–39.3%; $n = 3606$) had any mental disorder, either currently (GAD, AUD, PTSD) or during their lifetime (MDD). The prevalence estimates for lifetime MDD, current GAD and current PTSD were 18.4% (95% CI, 17.4–19.4%; $n = 1716$), 11.7% (95% CI, 10.8–12.5%; $n = 1148$) and 5.3% (95% CI, 4.7–5.9%; $n = 488$), respectively. Mild, moderate and severe current AUDs were diagnosed in 10.7% (95% CI, 9.9–11.5%; $n = 1058$), 4.7% (95% CI, 4.2–5.3%; $n = 486$) and 4.6% (95% CI, 4.0–5.1%; $n = 396$) of participants, respectively. There was no significant gender difference in the proportions of participants with at least one type of mental disorder, and men and women reported a similar prevalence of PTSD. Prevalence estimates for mild, moderate and severe AUDs were greater in men, whereas prevalence estimates for GAD and MDD were higher in women (Box 1).

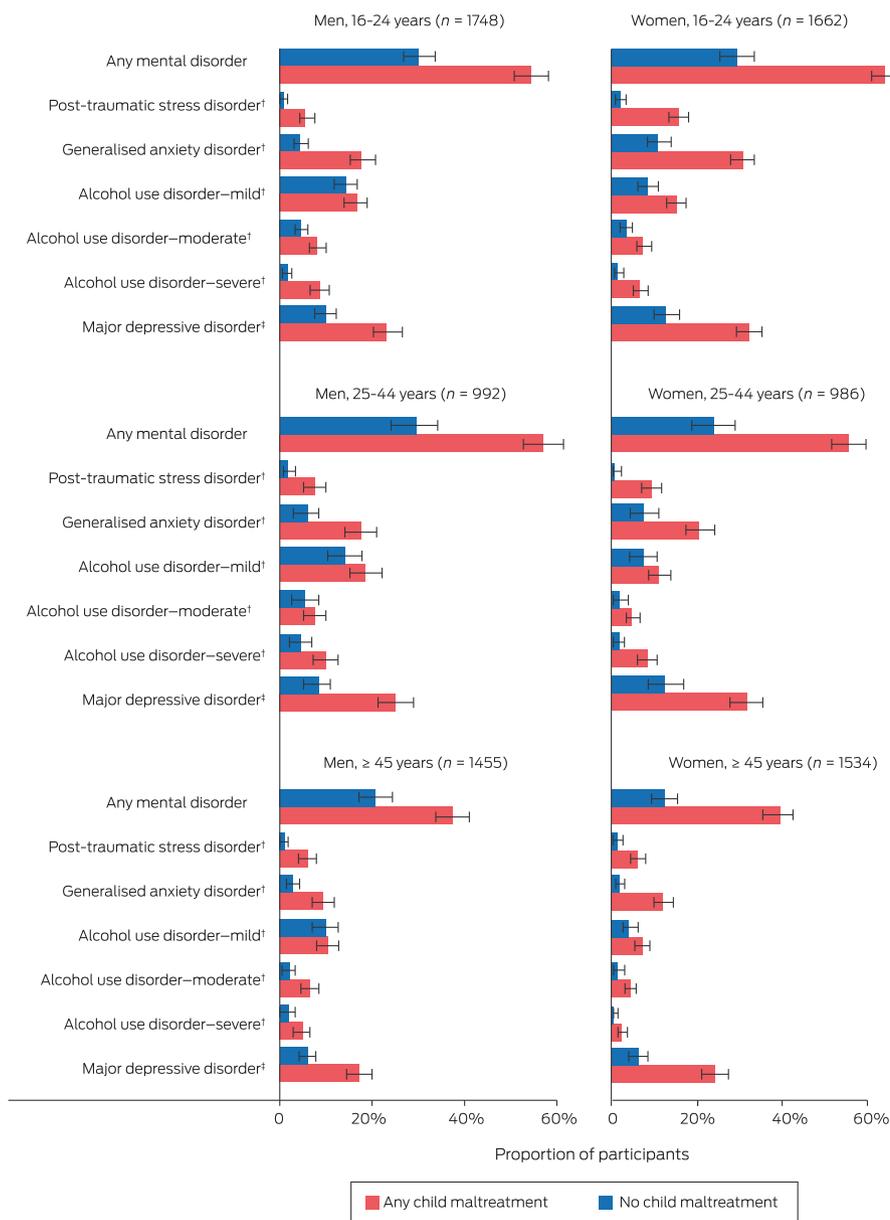
Prevalence estimates varied significantly with experiences of child maltreatment, as evidenced by non-overlapping CIs (Box 1). The prevalence of mental disorders in non-maltreated participants was 21.6% (95% CI, 19.9–23.3%; $n = 851$). This increased to 36.2% (95% CI, 33.5–38.9%; $n = 764$) for those who experienced a single type of maltreatment and 54.8% (95% CI, 52.6–56.9%; $n = 1991$) for participants who experienced multi-type maltreatment. For each type of mental disorder, the prevalence was also significantly greater in those who had experienced any child maltreatment. For example, the prevalence estimates for lifetime MDD in those with and without experiences of child maltreatment were 24.6% (95% CI, 23.2–26.1%; $n = 1386$) and 8.1% (95% CI, 7.0–9.2%; $n = 330$), respectively. Prevalence of PTSD was particularly low in non-maltreated individuals (1.3%; 95% CI, 0.8–1.7%; $n = 41$) compared with maltreated individuals (7.8%; 95% CI, 6.9–8.7%; $n = 447$). In those who experienced child maltreatment, the gender differences in prevalence were the same as in the total sample, with AUDs being more prevalent in men and GAD and MDD being more prevalent in women. With the exception of mild AUD, a dose–response relationship was

1 Prevalence of mental disorders in Australians 16 years and older, by experience of child maltreatment (N = 8503)

	Participants — number; percentage (95% CI)		
	Men (n = 4195)	Women (n = 4182)	All genders* (n = 8503)
Any mental disorder			
Total	1699; 38.0% (36.2–39.9%)	1824; 37.7% (35.9–39.5%)	3606; 38.0% (36.7–39.3%)
No child maltreatment	509; 25.0% (22.4–27.5%)	335; 17.7% (15.4–20.1%)	851; 21.6% (19.9–23.3%)
Any child maltreatment	1190; 47.3% (44.8–49.9%)	1489; 48.2% (45.8–50.5%)	2755; 48.0% (46.2–49.7%)
One type of child maltreatment	396; 40.1% (36.2–44.1%)	360; 32.3% (28.6–36.0%)	764; 36.2% (33.5–38.9%)
Two or more types of child maltreatment	794; 52.2% (48.9–55.5%)	1129; 56.4% (53.5–59.3%)	1991; 54.8% (52.6–56.9%)
Post-traumatic stress disorder[†]			
Total	167; 4.4% (3.6–5.3%)	296; 5.9% (5.1–6.8%)	488; 5.3% (4.7–5.9%)
No child maltreatment	20; 1.3% (0.6–2.0%)	20; 1.2% (0.5–1.9%)	41; 1.3% (0.8–1.7%)
Any child maltreatment	147; 6.7% (5.4–8.0%)	276; 8.4% (7.2–9.7%)	447; 7.8% (6.9–8.7%)
One type of child maltreatment	23; 2.8% (1.4–4.2%)	28; 2.5% (1.2–3.8%)	53; 2.6% (1.7–3.6%)
Two or more types of child maltreatment	124; 9.3% (7.4–11.3%)	248; 11.5% (9.7–13.3%)	394; 10.8% (9.5–12.1%)
Generalised anxiety disorder[†]			
Total	419; 9.8% (8.6–10.9%)	671; 13.0% (11.7–14.2%)	1148; 11.7% (10.8–12.5%)
No child maltreatment	76; 4.1% (2.9–5.3%)	96; 4.5% (3.3–5.7%)	175; 4.3% (3.5–5.2%)
Any child maltreatment	343; 13.8% (12.0–15.5%)	575; 17.4% (15.7–19.2%)	973; 16.1% (14.9–17.3%)
One type of child maltreatment	75; 7.5% (5.3–9.7%)	102; 8.5% (6.4–10.7%)	182; 8.1% (6.5–9.6%)
Two or more types of child maltreatment	268; 18.0% (15.5–20.5%)	473; 22.0% (19.7–24.4%)	791; 20.8% (19.1–22.5%)
Alcohol use disorder — mild[†]			
Total	619; 13.5% (12.2–14.8%)	428; 8.1% (7.1–9.1%)	1058; 10.7% (9.9–11.5%)
No child maltreatment	243; 12.0% (10.1–13.9%)	102; 5.5% (4.1–6.8%)	345; 8.9% (7.7–10.1%)
Any child maltreatment	376; 14.5% (12.7–16.3%)	326; 9.5% (8.2–10.8%)	713; 11.8% (10.7–12.8%)
One type of child maltreatment	163; 16.0% (13.1–18.9%)	86; 7.1% (5.1–9.2%)	251; 11.5% (9.7–13.3%)
Two or more types of child maltreatment	213; 13.5% (11.2–15.7%)	240; 10.7% (9.0–12.4%)	462; 11.9% (10.5–13.2%)
Alcohol use disorder — moderate[†]			
Total	267; 5.7% (4.8–6.6%)	211; 3.8% (3.1–4.5%)	486; 4.7% (4.2–5.3%)
No child maltreatment	76; 3.6% (2.5–4.8%)	36; 1.9% (1.1–2.7%)	112; 2.8% (2.1–3.5%)
Any child maltreatment	191; 7.2% (5.9–8.5%)	175; 4.8% (3.9–5.7%)	374; 5.9% (5.1–6.7%)
One type of child maltreatment	60; 6.1% (4.2–8.1%)	40; 2.6% (1.5–3.7%)	101; 4.3% (3.2–5.4%)
Two or more types of child maltreatment	131; 7.9% (6.2–9.6%)	135; 5.9% (4.6–7.2%)	273; 6.8% (5.8–7.8%)
Alcohol use disorder — severe[†]			
Total	220; 5.5% (4.6–6.4%)	164; 3.6% (2.9–4.3%)	396; 4.6% (4.0–5.1%)
No child maltreatment	43; 2.9% (1.8–3.9%)	19; 0.9% (0.4–1.4%)	62; 1.9% (1.3–2.6%)
Any child maltreatment	177; 7.4% (6.1–8.8%)	145; 5.0% (3.9–6.0%)	334; 6.1% (5.3–7.0%)
One type of child maltreatment	60; 6.2% (4.2–8.2%)	22; 2.8% (1.5–4.2%)	82; 4.5% (3.3–5.7%)
Two or more types of child maltreatment	117; 8.2% (6.4–10.1%)	123; 6.1% (4.7–7.5%)	252; 7.1% (6.0–8.2%)
Major depressive disorder[‡]			
Total	698; 15.4% (14.0–16.7%)	989; 21.2% (19.7–22.8%)	1716; 18.4% (17.4–19.4%)
No child maltreatment	165; 7.4% (5.9–8.8%)	162; 8.9% (7.2–10.6%)	330; 8.1% (7.0–9.2%)
Any child maltreatment	533; 21.1% (19.0–23.1%)	827; 27.7% (25.7–29.8%)	1386; 24.6% (23.2–26.1%)
One type of child maltreatment	149; 14.6% (11.8–17.5%)	211; 19.7% (16.6–22.8%)	363; 17.2% (15.1–19.3%)
Two or more types of child maltreatment	384; 25.4% (22.6–28.3%)	616; 31.9% (29.2–34.6%)	1023; 28.9% (27.0–30.9%)

* Includes participants who identified as gender diverse. † Current. ‡ Lifetime. ◆

2 Proportions of Australians 16 years and older with mental disorders, by age group, gender and experience of child maltreatment*



* Bar lengths represent percentage of participants with mental disorders and error bars represent 95% CIs. † Current. ‡ Lifetime. ◆

observed — those who experienced multi-type maltreatment had a significantly higher prevalence of each mental disorder compared with those who experienced one type of maltreatment.

The proportions of participants who met the diagnostic criteria for a mental disorder varied by age, gender and experience of maltreatment (Box 2). In all age groups, the proportion of participants with lifetime MDD was much greater in those who reported child maltreatment. With the exception of mild AUD, mental disorders were relatively uncommon (<10% prevalence) in those aged 45 years and older who reported no experiences of child maltreatment. Exact proportions of people with mental disorders exposed to child maltreatment are reported in Supporting Information, table 2.

The simple and fully adjusted odds of having each mental disorder for those who experienced maltreatment relative to those

who did not are shown in Box 3. Those who were maltreated had almost three times the odds of meeting the diagnostic criteria for any mental disorder, MDD, GAD and severe AUD when compared with those who had no experience of maltreatment. The likelihood of being diagnosed with PTSD was almost five times higher in those who reported experiences of maltreatment (OR, 4.60; 95% CI, 3.00–7.07) than those who did not. Compared with those with no maltreatment, the odds of having a mental disorder were higher for women than for men among those who experienced maltreatment. Adjustment for childhood or current financial hardship and current socio-economic status did not have a significant effect on the associations.

Positive associations were present for all forms of child maltreatment across all diagnoses of mental disorders (Box 4). Although the point estimates were generally greater for the associations between sexual abuse and the different mental

3 Odds ratios for mental disorders in Australians 16 years and older who experienced child maltreatment relative to those who did not

	Odds ratio (95% CI) — adjusted for age and gender			Odds ratio (95% CI) — fully adjusted		
	Men*	Women*	Total†	Men‡	Women‡	Total§
Any mental disorder	2.62 (2.20–3.12)	4.26 (3.52–5.15)	3.29 (2.89–3.73)	2.28 (1.90–2.72)	3.65 (2.99–4.45)	2.82 (2.47–3.22)
Post-traumatic stress disorder¶	5.18 (2.88–9.31)	7.33 (4.00–13.40)	6.21 (4.10–9.40)	3.77 (2.07–6.86)	5.43 (2.90–10.1)	4.60 (3.00–7.07)
Generalised anxiety disorder¶	3.56 (2.55–4.98)	4.33 (3.18–5.90)	3.94 (3.15–4.94)	2.82 (1.99–3.99)	3.48 (2.53–4.80)	3.14 (2.48–3.97)
Alcohol use disorder — mild¶	1.17 (0.93–1.48)	1.71 (1.25–2.35)	1.35 (1.13–1.62)	1.17 (0.92–1.50)	1.59 (1.13–2.23)	1.31 (1.08–1.59)
Alcohol use disorder — moderate¶	1.95 (1.32–2.88)	2.48 (1.54–4.00)	2.14 (1.59–2.90)	1.78 (1.19–2.65)	2.17 (1.31–3.61)	1.94 (1.42–2.66)
Alcohol use disorder — severe¶	2.55 (1.65–3.93)	5.11 (2.79–9.37)	3.18 (2.24–4.53)	2.11 (1.36–3.26)	4.18 (2.23–7.87)	2.62 (1.83–3.76)
Major depressive disorder**	3.21 (2.51–4.11)	3.76 (2.97–4.77)	3.50 (2.95–4.15)	2.83 (2.20–3.64)	3.52 (2.75–4.51)	3.19 (2.68–3.80)

* Model adjusted for age group. † Model adjusted for age group and gender. ‡ Model adjusted for age group, socio-economic status (based on postcode of residence and quintiles of the Index of Relative Socio-Economic Disadvantage), experience of financial hardship during childhood, and current financial strain. § Model adjusted for age group, gender, socio-economic status (based on postcode of residence and quintiles of the Index of Relative Socio-Economic Disadvantage), experience of financial hardship during childhood, and current financial strain. ¶ Current. ** Lifetime. ◆

disorders, the strengths of these associations did not differ significantly from those for other forms of maltreatment. For example, sexual abuse was associated with an almost 2-fold increase in the likelihood of PTSD (OR, 1.95; 95% CI, 1.47–2.60), whereas physical abuse had a smaller point estimate for the increase in likelihood of PTSD (OR, 1.59; 95% CI, 1.17–2.18). However, the overlapping CIs mean that the difference in the strengths of these associations was non-significant.

Sexual abuse was the only form of child maltreatment associated with all three levels of severity of AUDs. Importantly, emotional abuse was also consistently and independently associated with increased odds of most mental disorders, with associations similar in magnitude to those for sexual and physical abuse (Box 4). There were no significant differences between women and men in the strengths of association between each of the mental disorders and each type of child maltreatment. In all three age groups, there was a positive association between experiences of child maltreatment and the odds of having a mental disorder (Supporting Information, table 2), and the likelihood of having any mental disorder in those who experienced maltreatment was about three times higher than for those who did not experience maltreatment in all age groups. The point estimates were greatest for the association between maltreatment and PTSD in the youngest cohort (16–24 years), although the overlapping CIs suggest that the difference was not significant. The associations between reported child maltreatment and mental disorders persisted throughout life (Supporting Information, table 3).

Discussion

In this national survey, we measured experiences of all five forms of child maltreatment and diagnoses of mental disorders, and there were five key findings. First, the prevalence of mental disorders was significantly increased for Australians who experienced any child maltreatment compared with that for those who did not experience child maltreatment (48.0% v 21.6%), and higher again for those who experienced multi-type child maltreatment (54.8%). Second, all five forms of maltreatment were consistently associated with a 2–3-fold increase in the odds of a mental disorder diagnosis across genders and ages. Third, adjusting for current and childhood financial disadvantage did not significantly attenuate these associations, suggesting that the association between child maltreatment and mental disorders is independent of these social determinants of health. Fourth,

all forms of child maltreatment were similarly associated with mental health harm, although associations were strongest for sexual abuse and emotional abuse. Fifth, prevalence of common mental disorders such as PTSD and moderate and severe AUD was very low in Australians who had not experienced child maltreatment.

Findings from previous research suggest a causal relationship between child maltreatment and mental disorders.^{5,16} Biological changes and psychosocial challenges often experienced by maltreated children are responsible for the increased risk of mental disorders. Child maltreatment leads to cognitive alterations including distrust of others, hypervigilance to threat, impaired emotion recognition and regulation, and reduced responsiveness to rewards.^{17–19} Experiences of child maltreatment heighten threat perception, which activates the body’s stress response and sensitises the neurobiological systems, making an individual more vulnerable to mental illness.²⁰ In addition, low reward responsiveness, a key element of neglect and punitive parenting, is underpinned by neural changes associated with depression.^{21,22} Experiences of child maltreatment disrupt emotion recognition and regulation skills, which are critical for healthy relationships with peers¹⁹ and foundational to interpersonal relationships throughout life. These maladaptive interpersonal problems — for example, the premature sexualisation and shame that accompany sexual abuse — compromise the ability of some maltreated children to form stable friendships, which may lead to persistent relationship challenges over the life course.^{23,24} In this way, child maltreatment initiates a developmental cascade that disrupts social connection and other opportunities,²⁴ conferring risk of mental disorders. In summary, the increased risk of multiple biological changes and psychosocial challenges in maltreated children are hypothesised to increase the risk of mental illness.

The strengths of the associations between experiences of child maltreatment and mental disorders were similar in all three age groups. The typical persistent course of mental illness may explain the consistency of the relationship between maltreatment and mental disorders throughout life. The focus on service provision rather than prevention has had no impact on the population prevalence of mental disorders in Australia.²⁵ Whatever the mechanism by which maltreatment is associated with mental disorders, the prevention of harm to children must be a foundation of any mental health policy addressing mental illness in the population.

4 Odds ratios for mental disorders in Australians 16 years and older, by type of maltreatment

	Odds ratio (95% CI) — adjusted for age and gender			Odds ratio (95% CI) — fully adjusted		
	Men*	Women*	Total†	Men‡	Women‡	Total§
Post-traumatic stress disorder[¶]						
Emotional abuse	2.05 (1.26–3.31)	2.01 (1.26–3.21)	2.06 (1.47–2.89)	1.94 (1.18–3.18)	1.96 (1.23–3.12)	1.98 (1.41–2.77)
Neglect	1.78 (1.04–3.03)	2.25 (1.53–3.31)	1.92 (1.41–2.61)	1.76 (1.01–3.08)	1.97 (1.29–3.03)	1.71 (1.22–2.38)
Physical abuse	2.91 (1.72–4.93)	1.13 (0.77–1.68)	1.69 (1.24–2.32)	2.69 (1.62–4.45)	1.06 (0.71–1.57)	1.59 (1.17–2.18)
Sexual abuse	1.89 (1.22–2.92)	2.45 (1.68–3.57)	2.17 (1.65–2.87)	1.68 (1.07–2.63)	2.18 (1.48–3.22)	1.95 (1.47–2.60)
Exposure to domestic violence	1.13 (0.69–1.85)	2.05 (1.34–3.15)	1.60 (1.17–2.20)	1.06 (0.64–1.77)	2.05 (1.31–3.20)	1.53 (1.10–2.14)
Generalised anxiety disorder[¶]						
Emotional abuse	2.08 (1.50–2.88)	2.26 (1.64–3.10)	2.19 (1.74–2.75)	2.00 (1.44–2.79)	2.19 (1.59–3.02)	2.13 (1.69–2.68)
Neglect	1.40 (0.94–2.08)	1.65 (1.18–2.30)	1.53 (1.19–1.96)	1.40 (0.91–2.15)	1.40 (0.98–1.99)	1.35 (1.03–1.77)
Physical abuse	1.94 (1.40–2.68)	1.09 (0.82–1.47)	1.41 (1.14–1.74)	1.80 (1.31–2.47)	1.05 (0.78–1.41)	1.34 (1.08–1.66)
Sexual abuse	1.69 (1.24–2.31)	1.94 (1.50–2.51)	1.81 (1.49–2.19)	1.51 (1.10–2.08)	1.78 (1.37–2.32)	1.65 (1.35–2.01)
Exposure to domestic violence	1.32 (0.95–1.84)	1.30 (0.97–1.75)	1.32 (1.06–1.64)	1.26 (0.90–1.76)	1.25 (0.92–1.70)	1.25 (1.00–1.56)
Alcohol use disorder — mild[¶]						
Emotional abuse	0.79 (0.58–1.08)	0.99 (0.70–1.39)	0.87 (0.70–1.10)	0.79 (0.58–1.08)	0.96 (0.68–1.35)	0.86 (0.69–1.08)
Neglect	0.70 (0.41–1.19)	0.74 (0.48–1.15)	0.75 (0.54–1.05)	0.72 (0.41–1.27)	0.71 (0.44–1.16)	0.75 (0.52–1.07)
Physical abuse	1.14 (0.86–1.51)	0.99 (0.70–1.40)	1.08 (0.87–1.35)	1.14 (0.86–1.51)	1.00 (0.71–1.40)	1.08 (0.87–1.35)
Sexual abuse	1.09 (0.80–1.49)	1.55 (1.14–2.11)	1.35 (1.10–1.66)	1.08 (0.79–1.47)	1.53 (1.12–2.10)	1.34 (1.08–1.65)
Exposure to domestic violence	1.07 (0.82–1.39)	1.55 (1.14–2.10)	1.22 (1.00–1.49)	1.05 (0.80–1.37)	1.49 (1.09–2.05)	1.18 (0.97–1.45)
Alcohol use disorder — moderate[¶]						
Emotional abuse	1.11 (0.73–1.70)	1.86 (1.14–3.03)	1.38 (1.01–1.90)	1.08 (0.71–1.66)	1.83 (1.12–2.99)	1.35 (0.99–1.85)
Neglect	0.83 (0.43–1.60)	0.84 (0.47–1.50)	0.85 (0.56–1.30)	0.78 (0.39–1.53)	0.69 (0.38–1.24)	0.74 (0.48–1.15)
Physical abuse	1.18 (0.79–1.76)	1.26 (0.81–1.97)	1.21 (0.90–1.63)	1.16 (0.77–1.73)	1.23 (0.79–1.91)	1.19 (0.89–1.61)
Sexual abuse	1.52 (1.02–2.25)	1.71 (1.14–2.56)	1.62 (1.23–2.13)	1.44 (0.95–2.17)	1.65 (1.08–2.54)	1.55 (1.16–2.07)
Exposure to domestic violence	1.46 (0.99–2.16)	1.11 (0.70–1.75)	1.31 (0.98–1.77)	1.41 (0.95–2.08)	1.05 (0.66–1.68)	1.28 (0.95–1.73)
Alcohol use disorder — severe[¶]						
Emotional abuse	1.02 (0.68–1.54)	1.78 (1.05–3.03)	1.31 (0.95–1.81)	0.97 (0.64–1.46)	1.72 (1.01–2.94)	1.26 (0.91–1.74)
Neglect	1.27 (0.73–2.20)	1.16 (0.64–2.10)	1.21 (0.81–1.80)	1.24 (0.68–2.24)	1.08 (0.56–2.11)	1.09 (0.70–1.70)
Physical abuse	1.45 (0.96–2.18)	1.01 (0.57–1.78)	1.24 (0.88–1.73)	1.36 (0.92–2.01)	0.95 (0.54–1.68)	1.18 (0.85–1.64)
Sexual abuse	1.69 (1.13–2.52)	3.59 (2.27–5.69)	2.33 (1.75–3.08)	1.56 (1.04–2.35)	3.30 (2.08–5.21)	2.12 (1.59–2.82)
Exposure to domestic violence	1.70 (1.15–2.51)	1.06 (0.59–1.90)	1.43 (1.02–2.00)	1.62 (1.11–2.36)	1.04 (0.57–1.89)	1.36 (0.97–1.90)
Major depressive disorder**						
Emotional abuse	2.12 (1.60–2.82)	1.78 (1.38–2.30)	1.92 (1.59–2.32)	2.07 (1.56–2.76)	1.78 (1.37–2.30)	1.90 (1.57–2.30)
Neglect	1.30 (0.89–1.89)	0.84 (0.61–1.14)	0.96 (0.76–1.23)	1.22 (0.83–1.79)	0.88 (0.64–1.22)	0.96 (0.75–1.23)
Physical abuse	1.40 (1.09–1.80)	1.14 (0.89–1.46)	1.23 (1.04–1.47)	1.35 (1.05–1.74)	1.15 (0.90–1.48)	1.23 (1.03–1.46)
Sexual abuse	1.64 (1.27–2.12)	1.71 (1.39–2.11)	1.68 (1.43–1.97)	1.61 (1.24–2.09)	1.72 (1.39–2.13)	1.66 (1.41–1.95)

4 Continued

	Odds ratio (95% CI) — adjusted for age and gender			Odds ratio (95% CI) — fully adjusted		
	Men*	Women*	Total [†]	Men [‡]	Women [‡]	Total [§]
Exposure to domestic violence	1.38 (1.06–1.78)	1.53 (1.22–1.93)	1.46 (1.23–1.74)	1.32 (1.01–1.71)	1.49 (1.18–1.87)	1.41 (1.19–1.68)

* Model adjusted for age group. † Model adjusted for age group and gender. ‡ Model adjusted for age group, socio-economic status (based on postcode of residence and quintiles of the Index of Relative Socio-Economic Disadvantage), experience of financial hardship during childhood, and current financial strain. § Model adjusted for age group, gender, socio-economic status (based on postcode of residence and quintiles of the Index of Relative Socio-Economic Disadvantage), experience of financial hardship during childhood, and current financial strain. ¶ Current. ** Lifetime. ◆

Australian mental health strategies have failed to integrate the prevention of child maltreatment with other policy initiatives.³ This is important given the high burden of disease associated with depression and anxiety that is directly attributable to child maltreatment.⁸ Child protection is largely siloed from health services, frequently leading to inadequate management of co-occurring health and social problems in maltreated children.²⁶ Improving parenting skills and supporting healthy family interactions are fundamental to prevention of child maltreatment.²⁷ Universal implementation of evidence-based parenting interventions²⁸ and targeted delivery of nurse home visiting programs and interventions for mental disorders and substance use disorders to vulnerable parents^{29,30} are critical to make population-level reductions to the prevalence of child maltreatment and the associated mental health harm. To be most effective, these need to be underpinned by policies ensuring a living minimum wage and welfare support, and affordable and available child care and housing. The provision of evidence-based mental health interventions that address the harms experienced by maltreated children^{31,32} is required to prevent mental disorders from emerging and persisting throughout life; this has the potential to reduce associated costs and burden on the health care system.

Limitations

Maltreatment was assessed by retrospective self-report. It is possible that those living with mental disorders may be biased towards negative memories and, conversely, those without mental disorders may be more likely to minimise maltreatment that occurred in childhood.³³ To reduce this risk, the Juvenile Victimization Questionnaire-R2 adapted version (Australian Child Maltreatment Study) screened for child maltreatment with behaviourally specific items that assessed objective events to maximise the accuracy of participant recall. There may be unmeasured confounders that could attenuate the association between child maltreatment and later mental disorders,³⁴ such as parental mental illness.^{35,36} To reduce participant burden, selected modules from the MINI that we used to assess DSM-5 mental disorder diagnoses included point prevalence for some disorders (PTSD, GAD and AUD) and lifetime prevalence for MDD. The combination of time frames in our study is a limitation in our reporting of combined mental disorder prevalence. It will have led to underestimation of lifetime prevalence data, but has provided an overall estimate of point prevalence. Direct comparisons of prevalence between data from our survey and data collected during the period 2020–2021 in the National Survey of Mental Health and Wellbeing (which used DSM-IV)² are limited by differences in time frames and diagnostic criteria for measurement of mental disorders. This is particularly salient for mild AUD, which has a low threshold for diagnosis in DSM-5, requiring only two of the 11 dependence symptoms over the previous 12 months. However,

some direct comparisons can be made. For example, the 12-month prevalence of PTSD in the 2020–2021 National Survey of Mental Health and Wellbeing data was 5.7%, comparable to the 5.3% point prevalence in our study. We only assessed common mental disorders in our study, because the sample was not large enough to diagnose low prevalence disorders such as schizophrenia and bipolar disorder. However, the assessed disorders are responsible for most of the burden of disease attributable to mental disorders in Australia.¹ As noted elsewhere, few participants identified as gender diverse.¹² Thus, owing to small cell sizes and important aspects of gender diverse identification such as heterogeneity, we will report detailed analysis of findings for these participants separately. Finally, the study may not have been adequately powered to detect differences between men and women in strengths of associations between child maltreatment and certain mental disorders. It is likely that a larger sample would have shown that the associations between child maltreatment and PTSD were stronger in women than in men.

Conclusion

The prevalence of mental disorders is substantially higher in those who have experienced any type of child maltreatment and, particularly, multi-type maltreatment. Mental disorders cause significant suffering that all too frequently persists throughout life. They are responsible for a substantial burden on health care resources and expenditure. Prevention of child maltreatment provides an opportunity to substantially reduce the prevalence of mental disorders and improve the health of the Australian population.

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Supporting Information

Additional Supporting Information is included with the online version of this article.

The association between child maltreatment and health risk behaviours and conditions throughout life in the Australian Child Maltreatment Study

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The known: Globally, childhood maltreatment is associated with diverse negative outcomes in childhood and across the lifespan, including a range of health risk behaviours and conditions.

The new: The Australian Child Maltreatment Study has shown that the majority of Australians have experienced child maltreatment, and that these experiences are associated with substantially higher rates of health risk behaviours and conditions, including substance misuse, self-harm and suicide attempts. Sexual abuse and emotional abuse present the highest risks.

The implications: Trauma-informed health promotion strategies and interventions aimed at preventing health risk behaviours and conditions may require holistic psychosocial interventions.

To our knowledge, the Australian Child Maltreatment Study (ACMS) has produced the first national estimates of prevalence of child maltreatment (emotional abuse, neglect, physical abuse, sexual abuse, and exposure to domestic violence). As reported elsewhere in this supplement, child maltreatment is a common experience in Australia.^{1,2} About two-thirds of Australian adults reported experiencing at least one of the five types of child maltreatment before the age of 18 years,¹ and more than half of them experienced more than one type of child maltreatment.²

Child maltreatment is associated with many negative health and social outcomes across the lifespan.³⁻⁶ The impact of child maltreatment is pervasive across many mental disorders and physical illnesses. This includes maltreatment being associated with elevated lifetime risk of cancer; cardiovascular, respiratory and genitourinary diseases; depression and anxiety; post-traumatic stress disorder; substance misuse disorders; and self-harm and suicide.^{4,5} Pathways from child maltreatment to these negative outcomes are complex. One of the most direct ways in which maltreatment causes harm is through its effect on health risk behaviours and conditions, many of which emerge early in the life course and persist for decades.

Several theoretical mechanisms have been posited for causal associations between child maltreatment and subsequent health risks.⁷ First, the distress associated with child maltreatment can be long lasting and can prompt maladaptive coping mechanisms such as substance misuse.⁸⁻¹¹ Second, unresolved trauma is associated with emotional numbing, and victim-survivors may self-harm to seek feeling.^{3,6} Third, the trauma associated with child maltreatment can be so pervasive that victim-survivors feel both thwarted belongingness and perceived

Abstract

Objective: To estimate associations between all five types of child maltreatment (emotional abuse, neglect, physical abuse, sexual abuse, and exposure to domestic violence) and health risk behaviours and conditions.

Design, setting, participants: Nationally representative survey of Australian residents aged 16 years and older conducted by computer-assisted telephone interviewing.

Main outcome measures: Associations between child maltreatment and the following health risk behaviours and conditions: current smoker, binge drinking (at least weekly in past 12 months), cannabis dependence (according to the Cannabis Severity of Dependence Scale), obesity (based on body mass index), self-harm in past 12 months, and suicide attempt in past 12 months.

Results: A total of 8503 participants completed the survey. All five types of child maltreatment were associated with increased rates of all of the health risk behaviours and conditions that we considered. The strongest associations were in the youngest age group (16–24-year-olds). Sexual abuse and emotional abuse were associated with the highest odds of health risk behaviours and conditions. Cannabis dependence, self-harm and suicide attempts were most strongly associated with child maltreatment. Experiencing more than one type of child maltreatment was associated with higher rates of health risk behaviours and conditions than experiencing one type of child maltreatment.

Conclusions: Child maltreatment is associated with substantially increased rates of health risk behaviours and conditions. Prevention and intervention efforts should be informed by trauma histories, and holistic psychosocial care should be incorporated into programs focusing on behaviour change.

burdensomeness.^{12,13} With experience of emotional numbing and self-harming behaviour, victim-survivors of child maltreatment may also acquire capability for suicide.^{6,13,14}

In this article, we report the prevalence of six health risk behaviours and conditions: smoking, binge drinking, cannabis dependence, obesity, self-harm, and suicide attempts. We also examine how the prevalence of each of these health risks is associated with each of the five types of child maltreatment, and how associations between child maltreatment and health risks vary by age group and gender. As most of the hypothesised mechanisms for the impact of child maltreatment on subsequent health risks are associated with emotional and behavioural rather than physical pathways, we hypothesise that health risk behaviours and conditions are more common in people who have experienced child maltreatment, and that non-physical maltreatment is as harmful as physical and sexual abuse.

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1 Prevalence of health risk behaviours and conditions, by experience of child maltreatment

	Number (percentage) of participants*		
	Did not experience any child maltreatment (n = 3223)	Experienced any child maltreatment (n = 5280)	Total sample (N = 8503)
Current smoker	316 (11.1%)	996 (21.1%)	1312 (17.3%)
Binge drinking [†]	271 (8.4%)	597 (12.6%)	868 (11.0%)
Cannabis dependence	21 (0.5%)	238 (3.7%)	259 (2.5%)
Obesity [‡]	580 (24.4%)	1214 (28.2%)	1794 (26.8%)
Self-harm in past 12 months	47 (0.7%)	365 (4.7%)	412 (3.2%)
Suicide attempt in past 12 months	12 (0.3%)	122 (1.5%)	134 (1.1%)

* Participant numbers are unweighted sample counts and percentages are weighted prevalence estimates. † Six or more drinks (men) or five or more drinks (women) at least weekly in past 12 months. ‡ In the obese body mass index range (> 30 kg/m²); as 379 participants did not know or refused to provide their weight and/or height, prevalence estimates for obesity were calculated by excluding these participants. ◆

Methods

Participants

Full details of the ACMS methodology are provided elsewhere in this supplement.¹⁵ Briefly, ACMS participants were recruited by random digit dialling of mobile phones; each potential participant was sent an advance text message, and this was followed up with a verbal invitation to participate by an interviewer. Demographic distribution of the sample was compared with 2016 census data, and data were weighted to adjust for higher representation of Australian born and higher socio-economic status participants. Comparison with Australian census and 2017 survey data showed that the weighted data were representative of the population of Australians aged 16 years and older.¹⁵

Measures

Child maltreatment was assessed using the Juvenile Victimization Questionnaire-R2 adapted version (Australian Child Maltreatment Study). The 16 screener items measured all five types of child maltreatment (emotional abuse, neglect, physical abuse, sexual abuse, and exposure to domestic violence). The survey also asked about health risk behaviours and conditions, which included: cigarette smoking in the past 12 months; binge drinking (having six or more drinks for men or five or more drinks for women in a single session at least weekly over the past 12 months); cannabis dependence (Cannabis Severity of Dependence Scale score of 3 or more);^{16,17} obesity (body mass index > 30 kg/m² based on self-reported height and weight); non-suicidal self-injury (answering yes to the question “during the past 12 months have you deliberately harmed or injured yourself, without intending to end your own life?”); and suicide attempt (answering yes to the question “during the past 12 months, have you attempted suicide?”). Except for the Cannabis Severity of Dependence Scale item, these items were drawn from the 2007 Australian National Survey of Mental Health and Wellbeing.¹⁸

Statistical analysis

Experiences of physical abuse, sexual abuse and exposure to domestic violence were based on positive endorsement of any of the screener items for these child maltreatment types, regardless of how many times the experience happened. Conceptually, emotional abuse and neglect require a pattern of behaviour, so we only counted positive endorsements to the screener items if

the experience occurred over a period of weeks, months or years; this meant that participants who reported a duration of days for emotional abuse and neglect were classified as non-maltreated for these two types.¹

Respondents could refuse to answer any question they were uncomfortable with. The amount of missing data was less than 1% for each type of child maltreatment and each health risk behaviour and condition that we considered. While some participants for whom such data were missing may have experienced child maltreatment, we have conservatively chosen to treat missing data as non-endorsements. As such, our prevalence estimates for child maltreatment and health risks may be slightly underestimated.

Survey-weighted prevalence of each health risk behaviour or condition was calculated by experience of child maltreatment (any maltreatment, each type of maltreatment, subtypes of physical abuse and sexual abuse, and number of maltreatment types [none, one, two, and more than two]) and by gender and age group, and 95% confidence intervals were calculated using the method of expansion in Taylor series.¹⁹ Logistic regression models were fitted for each of the six health risk behaviours and conditions. For each health risk, three separate models were fitted: experience of any child maltreatment compared with no child maltreatment; separately for each of the five types of maltreatment using a three-level indicator (experienced that type of maltreatment, experienced any other type of maltreatment, no child maltreatment); and all five types of child maltreatment fitted simultaneously as independent binary (yes/no) variables. Each model was fitted with two levels of adjustment for other factors: adjusted for age group, gender and child maltreatment only (simple adjustment), and adjusted for age group, gender, child maltreatment, socio-economic status (based on postcode of residence and quintiles of the Index of Relative Socio-Economic Disadvantage [one of the Socio-Economic Indexes for Areas]),²⁰ experience of financial hardship during childhood, and current level of financial strain (fully adjusted).

All analyses were conducted using SAS 9.4. To ensure quality, two of us (EM and DH) randomly spot-checked the SAS coding and results in SPSS 27.

Ethics approval

The Queensland University of Technology Human Research Ethics Committee approved the study (1900000477).

Results

A total of 8503 participants completed the survey. All six health risks were more common in those who experienced child maltreatment compared with those who did not (Box 1). Estimated prevalence rates were significantly higher for people who experienced child maltreatment for all health risks in women ($P < 0.05$) and all health risks except obesity in men ($P < 0.05$) (Box 2).

The differences between prevalence rates for people who experienced child maltreatment versus those who did not were highest for lower frequency health risk behaviours and conditions. As an example of one of the lower frequency health risks, an estimated 196 900 people who experienced child maltreatment had attempted suicide in the 12 months before the survey compared with 22 300 people who did not (rates of 1.5% *v* 0.3%). As examples of relatively high frequency health risks, about 608 300 people who experienced child maltreatment had self-harmed in the 12 months before the survey compared with 52 100 people who did not (4.7% *v* 0.7%), and about 481 100 people who experienced child maltreatment were classified as having cannabis dependence compared with 42 400 who did not (3.7% *v* 0.5%). Rates were similar across each of the five types of child maltreatment (Box 3).

Health risk behaviours and conditions were more common in people who had experienced multiple types of child maltreatment. For instance, 831 200 of those who experienced one type of child maltreatment were current smokers (17.6%) compared with 1 882 200 of those who experienced two or more types of maltreatment (23.1%), a statistically significant difference. This pattern was also statistically significant for cannabis dependence, self-harm and suicide attempts (Supporting Information, table 1).

Rates of health risk behaviours and conditions varied across age groups; for example, current smoking was highest in

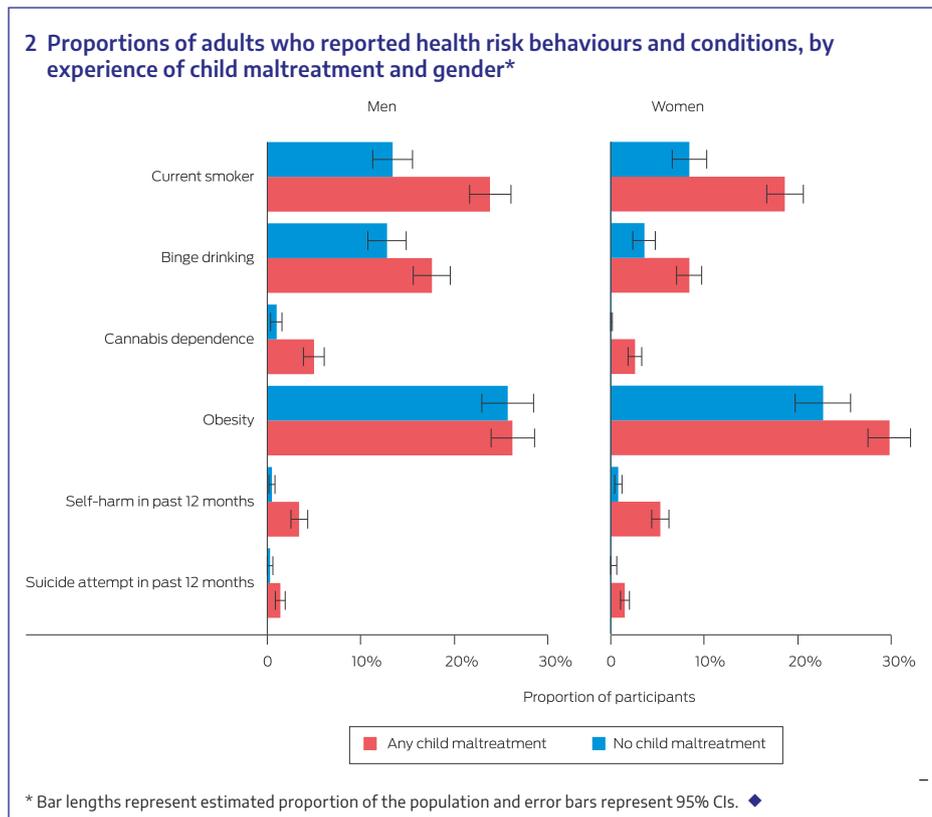
25–44-year-olds. However, the differences in proportions of current smokers between those who had and had not experienced child maltreatment were higher for 16–24-year-olds and those aged ≥ 45 years (Box 3).

Binge drinking was more common in men than women. For men the prevalence was higher in the middle and older age groups. The differences in proportions of those who reported binge drinking between those who had and had not experienced child maltreatment were larger for women in the middle and older age groups (Box 3). The prevalence of cannabis dependence was much lower than that for cigarette smoking or binge drinking, but it was strongly associated with child maltreatment. There were no participants aged 25 years or older with no experience of child maltreatment who were dependent on cannabis (Box 3).

Rates of obesity only varied between those with and without experience of child maltreatment for women aged 16–24 years and women aged ≥ 45 years, for whom substantial differences were observed (Box 3).

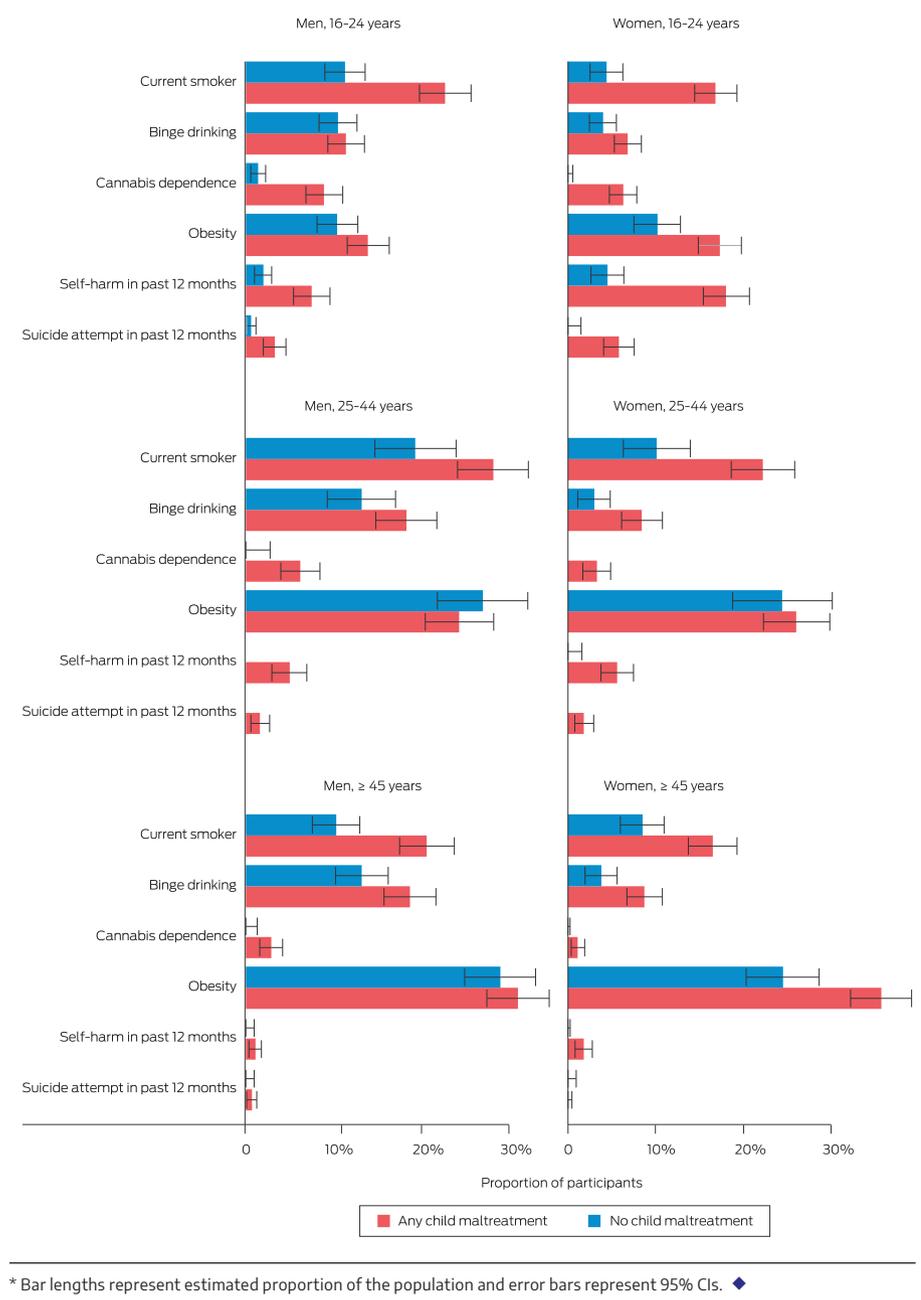
Rates of self-harm and suicide attempts varied significantly between people with and without experience of child maltreatment. Rates of self-harm and suicide attempts were highest for 16–24-year-olds. In the middle and older age groups, self-harm and suicide attempts were only reported in those who had experienced child maltreatment. In the middle and older age groups, the estimated prevalence of self-harm was about zero in both men and women without experience of child maltreatment (Box 3).

We used logistic regression to examine the relationships between child maltreatment and health risk behaviours and conditions. Considering any experience of child maltreatment compared with no child maltreatment, all health risks were significantly elevated. Also, after adjusting for age group, gender, socio-economic status, financial hardship during childhood and current financial strain, all health risks were significantly elevated in those who experienced child maltreatment. In addition, for most estimates, the attenuation of odds ratios was relatively modest when controlling for socio-economic factors (odds ratio reduced from 7.13 to 6.18 for cannabis dependence, from 6.72 to 3.93 for self-harm, and from 5.12 to 4.56 for suicide attempt; Box 4).



Considering the five types of child maltreatment, we modelled associations with health risks in two ways. First, we considered each type of maltreatment one at a time with a binary (yes/no) indicator, while adjusting for experience of any other type of maltreatment with a binary indicator. Using this approach, all five types of child maltreatment were significantly associated with higher odds of all six health risks, when adjusting for age group and gender only, and all except for the association between neglect and binge drinking remained significant when adjusting for socio-economic factors (Supporting Information, table 2). Second, we modelled all five types of child maltreatment simultaneously as independent binary variables. Using this approach, sexual abuse was independently associated with

3 Proportions of adults who reported health risk behaviours and conditions, by experience of child maltreatment, age group and gender*



higher odds of all six health risks, and emotional abuse was independently associated with higher odds of all health risks except binge drinking. Also, exposure to domestic violence was associated with higher odds of current smoking and higher odds of cannabis dependence, and physical abuse was associated with higher odds of suicide attempt (Supporting Information, table 3).

Additional data from the study relating to the association between experience of child maltreatment and health risks by age and sex are presented in the Supporting Information (table 4 and figures 1–6).

Discussion

In our survey, Australians who had experienced child maltreatment were more likely to report all six health risk behaviours and

conditions. Considered individually, all five types of child maltreatment were associated with higher rates of health risks. When considered jointly, emotional abuse and sexual abuse were both independently associated with higher rates of health risks. Health risks were significantly more common in people who experienced multiple types of child maltreatment. Although all six health risk behaviours and conditions that we examined are known to be associated with socio-economic status,^{21,22} our adjusted models showed that associations between child maltreatment and health risks were only modestly attenuated after adjustment for socio-economic factors.

While several studies have reported associations between health risk behaviours and conditions and adverse child experiences in adolescents,^{3,6,9,10} there is limited information on associations between specific types of child maltreatment and health risks across the life course. While sexual abuse is a well known risk factor for adverse life outcomes including health risks,^{9,14,21} our data show that emotional abuse was as strongly associated with each health risk as sexual abuse. Moreover, sexual abuse and emotional abuse were the two maltreatment types with the highest odds ratios for multiple health risks, being especially strongly associated with suicide attempts, self-harm, cannabis dependence, smoking and binge drinking (Supporting Information, table 3). A birth cohort study has found a similar association between emotional abuse in childhood and mental health outcomes at age 30 years,²³ and it is possible that mental health problems associated with child maltreatment are an important pathway to these health risks.

In adults who had no history of child maltreatment, prevalence of cannabis dependence, self-harm in the previous 12 months and suicide attempts in the previous 12 months were almost zero. While the ACMS is a cross-sectional study, child maltreatment was assessed up to age 18 years, and all six health risks that we considered were current or had occurred in the previous 12 months. This suggests that these harmful behaviours and conditions persist well beyond the experience of child maltreatment. While a cross-sectional study cannot demonstrate cause and effect, the strong associations and negligible rates among older adults with no experience of child maltreatment are consistent with possible causal association. While less prevalent overall, cannabis dependence, self-harm and suicide attempts had substantially higher odds ratios for associations with health risks than smoking, binge drinking and obesity, suggesting that there may be few causal mechanisms associated with these health risks that do not involve experience of trauma or child maltreatment.

4 Odds ratios for health risk behaviours and conditions for adults who experienced child maltreatment relative to those who did not*

	Simply adjusted odds ratio (95% CI) [†]	Fully adjusted odds ratio (95% CI) [‡]
Current smoker	2.08 (1.76–2.47)	1.87 (1.62–2.16)
Binge drinking	1.63 (1.35–1.98)	1.31 (1.12–1.54)
Cannabis dependence	7.13 (3.79–13.4)	6.18 (3.92–9.76)
Obesity	1.20 (1.04–1.38)	1.17 (1.04–1.32)
Self-harm in past 12 months	6.72 (4.50–10.2)	3.93 (2.86–5.41)
Suicide attempt in past 12 months	5.12 (2.20–11.8)	4.56 (2.46–8.43)

* All odds ratios were significantly higher than 1 at $P < 0.05$. † Model adjusted for age group and gender only. ‡ Model adjusted for age group, gender, socio-economic status (based on postcode of residence and quintiles of the Index of Relative Socio-Economic Disadvantage), experience of financial hardship during childhood, and current financial strain. ◆

Strong associations between each of the five types of child maltreatment and cigarette smoking and binge drinking were found across the three age groups. Child maltreatment may lead to onset of substance misuse in adolescence, and ongoing dependence on substances throughout life.^{8–10} The persistence of these maladaptive coping strategies in older age groups extends the harms caused by childhood trauma by contributing to poor health in older age.^{24,25}

These findings have implications for the design of health promotion interventions. Many interventions to reduce health risk behaviours and conditions, particularly substance misuse and obesity, are focused on the specific health risk with little consideration of comorbid issues such as mental health, family dysfunction and experience of trauma.^{26,27} The effectiveness of interventions to reduce health risks may be enhanced by incorporating program design measures to address trauma histories. Holistic psychosocial care rather than siloed behavioural interventions are likely to be more appropriate and effective.^{27,28}

Strengths and limitations

To our knowledge, the ACMS is the first nationally representative study of the prevalence and impacts of child maltreatment in Australia. Its large size and rigorous assessment of child maltreatment provide statistical power that is sufficient to assess the associations between child maltreatment and health risk behaviours and conditions throughout life. Although we have investigated associations between child maltreatment and recent health risk behaviours and conditions, our data cannot be used to determine causal pathways. Also, due to

questionnaire length constraints, we could not assess other health risks that have been associated with child maltreatment in other studies, including misuse of substances other than cannabis and alcohol and risky sexual behaviour. As noted elsewhere in this supplement, few participants identified as gender diverse.¹⁶ For this reason, and because of small cell sizes and heterogeneity and other important aspects of gender-diverse identification, detailed analysis of findings for these participants will be reported separately (manuscript in preparation).

Conclusion

Health risk behaviours and conditions are common, and child maltreatment was associated with higher rates of all health risks considered in this study. Interventions to address these health risks need to consider the role of childhood trauma in health risk onset and persistence — for example, explicit recognition of the need for and benefit of more adaptive coping mechanisms for dealing with past trauma, and incorporation of an explicit focus on the association between mental health and health risk behaviours. Prevention of child maltreatment may provide enormous benefits in terms of improving the wellbeing of children and the health the Australian population during adolescence and adulthood.

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Supporting Information

Additional Supporting Information is included with the online version of this article.

Child maltreatment and health service use: findings of the Australian Child Maltreatment Study

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The known: Adverse health outcomes associated with child maltreatment lead to greater health service use throughout life.

The new: Our survey found that child maltreatment in Australia, particularly the experience of multiple types of maltreatment, is associated with increased likelihood of hospital admission with mental disorders, and higher numbers of consultations with health care professionals of various types.

The implications: Our findings confirm the impact of maltreatment during childhood on health service use. Alongside effective prevention strategies, integrated physical and psychological health care is needed to reduce the harms caused by maltreatment and to improve long term health.

The Australian Child Maltreatment Study (ACMS) provides the first national estimates of the prevalence of child maltreatment (physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence) in Australia.^{1,2} As reported in this Supplement, 62.2% of survey participants reported they had experienced at least one of the five types of maltreatment before the age of 18 years, 39.4% reported more than one type of maltreatment, and 23.3% reported three or more types of maltreatment.²

Causal relationships have been established between child maltreatment and mental and physical health outcomes across life,³⁻⁶ and concomitant increases in health service use have been documented.^{7,8} A prospective cohort study in the United States found that people with histories of maltreatment during childhood were more likely to report using mental health and social services as adults;⁹ another large study found increased health care use by women who experienced physical or sexual abuse, and annual health care costs were 36% higher for those who experienced both maltreatment types.¹⁰ A Canadian study found that self-reported annual health care costs were 94% higher for women who experienced physical and sexual abuse during childhood.¹¹ A birth cohort study in South Australia found that emergency department visit rates, particularly visits during adolescence and early adulthood related to self-harm, substance use, and mental health, were higher for people who reported earlier contact with child protection services; people who had been maltreated sought help related to substance use or mental illness 3–15 times as frequently as people who had not been maltreated.¹²

Notwithstanding data limitations and uncertainty about its exact magnitude, the economic burden of child maltreatment is great.¹³⁻¹⁶ Given the implications for governments of increased demands on limited health care resources, understanding

Abstract

Objectives: To examine associations between child maltreatment and health service use, both overall, by type and by the number of types of maltreatment reported.

Design, setting: Cross-sectional, retrospective survey using the Juvenile Victimization Questionnaire-R2: Adapted Version (Australian Child Maltreatment Study); computer-assisted mobile telephone interviews using random digit dialling, Australia, 9 April – 11 October 2021.

Participants: Australians aged 16 years or more. The target sample size was 8500 respondents: 3500 people aged 16–24 years and 1000 respondents each from the five age groups (25–34, 35–44, 45–54, 55–64, 65 years or more).

Main outcome measures: Self-reported health service use during the past twelve months: hospital admissions, length of stay, and reasons for admission; and numbers of consultations with health care professionals, overall and by type. Associations between maltreatment and health service use are reported as odds ratios adjusted for age group, gender, socio-economic status, financial hardship (childhood and current), and geographic remoteness.

Results: A total of 8503 participants completed the survey. Respondents who had experienced child maltreatment were significantly more likely than those who had not to report a hospital admission during the preceding twelve months (adjusted odds ratio [aOR], 1.39; 95% confidence interval [CI], 1.16–1.66), particularly admission with a mental disorder (aOR, 2.4; 95% CI, 1.03–5.6). The likelihood of six or more visits to general practitioners (aOR, 2.37; 95% CI, 1.87–3.02) or of a consultation with a mental health nurse (aOR, 2.67; 95% CI, 1.75–4.06), psychologist (aOR, 2.40; 95% CI, 2.00–2.88), or psychiatrist (aOR, 3.02; 95% CI, 2.25–4.04) were each higher for people who reported maltreatment during childhood. People who reported three or more maltreatment types were generally most likely to report greater health service use.

Conclusions: Child maltreatment has a major impact on health service use. Early, targeted interventions are vital, not only for supporting children directly, but also for their longer term wellbeing and reducing their health system use throughout life.

patterns of health service use by people maltreated as children is important for reliable estimates of their health care use across life.

In the ACMS, child maltreatment was associated with greater risk of mental disorders,¹⁷ self-harm, suicide attempts, and health risk behaviours and conditions such as cannabis dependence, obesity, smoking, and alcohol binge drinking that are major risk factors for non-communicable diseases.¹⁸ We analysed ACMS data to assess associations between child maltreatment and health service use, both overall, by type, and by whether one or multiple types of maltreatment were experienced.

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Methods

The ACMS is a cross-sectional survey study of people in Australia aged 16 years or more during 9 April – 11 October 2021 about their childhood and health. The methodology and definitions of child maltreatment are described elsewhere.^{19,20} In brief, participants were recruited using a mobile phone sampling frame and random digit dialling methodology. The target survey respondent number was 8500: 3500 people aged 16–24 years (oversampled) and 1000 in each of the age groups 25–34, 35–44, 45–54, 55–64, and 65 years or more. To ensure that the sample was representative of the population, survey data were weighted by age group, gender, Indigenous status, country of birth (Australia or overseas), highest educational level, and residential socio-economic status (Socio-Economic Indexes for Areas [SEIFA] Index of Relative Socio-economic Advantage and Disadvantage).¹⁹

Measures

Child maltreatment was assessed with the Juvenile Victimization Questionnaire-R2: Adapted Version (Australian Child Maltreatment Study).^{19,20} The five types of child maltreatment (physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence) were assessed by sixteen survey items. We assessed self-reported health service use with items from the 2007 National Survey of Mental Health and Wellbeing health service utilisation module,²¹ with minor modifications required for the ACMS, including health service use related to coronavirus disease 2019 (COVID-19). The selected items included hospital use (“In the past 12 months, how many times were you admitted overnight to any hospital (excluding childbirth)?”: 0, 1 or more times) and hospital length of stay (“How many nights in total did you stay overnight in hospital?”). In addition, we collected information on the reason for overnight hospital admission with a list of nine mental health and eleven physical health conditions (including “other”; multiple reasons could be given).

Participants also reported consultations with health care professionals (“How many times did you see each of the following health professionals in the last 12 months?”; 0, 1–5, 6–11, 12–23, 24 or more times), including general practitioners, psychologists, psychiatrists, mental health nurses, allied health professionals (social workers, counsellors, physiotherapists, occupational therapists), and specialist physicians. We asked about use during the preceding twelve months to minimise recall bias, and because we assumed participants would remember reasons for hospitalisation during this time period. We did not ask about reasons for health professional consultations as there would often have been several reasons, and to minimise participant burden and recall bias.

Financial hardship during childhood was assessed with the question: “How often did your family experience economic hardship such as finding it difficult to provide food, medical care, or other basic necessities?” Childhood financial hardship was recorded for participants who responded “somewhat often” or “very often”.

Based on residential postcode, we assessed socio-economic status with the SEIFA Index of Relative Socio-economic Disadvantage (IRSD; by quintile),²² and remoteness with the Australian Statistical Geography Standard Remoteness Structure (major cities, inner regional, outer regional, remote).²³ Current financial hardship was assessed with the question: “In the past 12 months,

has there been a time when your household could not meet its essential expenses?” (yes/no response option).

Statistical analysis

For each question on child maltreatment and health service use, fewer than 1% of participants declined to respond. We conservatively chose to treat missing data as non-endorsements (negative responses).

Associations between reported child maltreatment and health service use were examined in three survey-weighted logistic regression models. In the first model, adjusted odds ratios (aORs) and 95% confidence intervals (CIs) were estimated for health service use by child maltreatment (any *v* none); in the second, for health service use by each of the five types of child maltreatment, fitted simultaneously as independent binary (yes/no) variables, enabling associations between health service use and each maltreatment type to be adjusted for experiences of other types of maltreatment; and in the third model, for health service use by number of types of maltreatment (one, two, or three or more types). Two levels of adjustment for other factors were applied to each model: partial, which took into account basic demographic characteristics (age group, gender) and fully adjusted, which also took geographic and socio-economic factors into account (socio-economic status quintile, financial hardship during childhood, current financial stress, and geographic remoteness). The statistical significance of differences in survey-weighted median hospital length of stay between participants who reported or did not report maltreatment during childhood was assessed in Mann-Whitney *U* tests.

All analyses were conducted in SAS 9.4. Each analysis was independently checked by two co-authors, in random spot checks of SAS code and checking of analysis results in SPSS 28.

Ethics approval

The study was approved by the Queensland University of Technology Human Research Ethics Committee (1900000477).

Results

A total of 8503 Australian residents aged 16 years or more completed the ACMS survey, of whom 1218 (survey-weighted proportion, 15.4%; 95% CI, 14.4–16.3%) had been admitted to hospital overnight at least once during the past year (857 of 5280 people who reported maltreatment [16.9%; 95% CI, 15.6–18.3%]; 361 of 3223 who reported no maltreatment [12.7%; 95% CI, 11.2–14.3%]) (Box 1). The survey-weighted median length of stay for each group was three days (95% CI, 2.5–3.5 days). The survey-weighted proportion for hospital admissions is slightly higher than both the unweighted value (14.3%) (Supporting Information, table 1) and the value reported for 2020–21 by the Australian Bureau of Statistics for people aged 15 years or more (12.5%).²⁴

Any maltreatment during childhood

After adjusting for socio-demographic characteristics, financial hardship (childhood and current), and geographic remoteness, people who reported maltreatment were more likely than those who did not to have had an overnight hospital admission during the past twelve months (aOR, 1.39; 95% CI, 1.16–1.66) (Box 1). Participants who reported any maltreatment were also more likely to report a mental disorder as the reason for hospitalisation

1 Likelihood of overnight hospital admission during the preceding twelve months (maltreatment reported v not reported), by maltreatment type

Maltreatment type	Admissions		Adjusted odds ratio (95% CI)	
	Numbers	Weighted proportion (95% CI)	Partial [*]	Full [†]
No maltreatment	361/3223	12.7% (11.2–14.3%)	1	1
Any maltreatment	857/5280	16.9% (15.6–18.3%)	1.52 (1.29–1.80)	1.39 (1.16–1.66)
Physical abuse	481/2623	18.5% (16.7–20.4%)	1.25 (1.04–1.51)	1.21 (1.00–1.46)
Sexual abuse	448/2348	19.2% (17.2–21.2%)	1.33 (1.10–1.59)	1.24 (1.03–1.50)
Emotional abuse	494/2743	18.3% (16.4–20.1%)	1.23 (1.00–1.51)	1.19 (0.97–1.47)
Neglect	146/759	17.5% (14.2–20.9%)	0.89 (0.68–1.18)	0.79 (0.59–1.07)
Exposure to domestic violence	576/3487	16.8% (15.2–18.4%)	1.11 (0.92–1.33)	1.08 (0.90–1.31)

CI = confidence interval. * Adjusted for other maltreatment types (when applicable), age group, and sex. † Adjusted for other maltreatment types (when applicable), age group, sex, socio-economic status, financial hardship (childhood and current), and geographic remoteness. ◆

2 Likelihood of reasons for overnight hospital admission during the preceding twelve months (maltreatment reported v not reported)*

Reason for admission	Adjusted odds ratio (95% CI)	
	Partial [†]	Full [‡]
Any mental disorder [§]	2.7 (1.1–6.5)	2.4 (1.03–5.6)
Anxiety	0.8 (0.3–2.3)	0.9 (0.4–2.2)
Depression	3.6 (0.6–21)	3.3 (0.5–20)
Drug-related problems	3.7 (0.6–21)	2.2 (0.4–12)
Alcohol-related problems	0.6 (0.2–2.1)	1.1 (0.4–3.7)
Suicide risk	3.8 (0.8–18)	1.4 (0.6–3.3)
Heart disease [¶]	1.7 (0.9–3.4)	1.3 (0.6–2.5)
Injury or results of injury	1.1 (0.7–1.7)	1.1 (0.7–1.6)
Asthma or chronic bronchitis	0.9 (0.2–3.4)	0.8 (0.2–3.1)
Diabetes	1.4 (0.3–6.8)	0.5 (0.1–2.2)
Cancer	1.0 (0.5–2.2)	1.1 (0.5–2.5)
Stroke	0.6 (0.2–1.7)	0.4 (0.1–0.97)

CI = confidence interval. * A more comprehensive list of conditions, and the raw data underlying the adjusted odds ratios, are included in the Supporting Information, table 1. † Adjusted for age group, and sex. ‡ Adjusted for age group, sex, socio-economic status, financial hardship (childhood and current), and geographic remoteness. § Includes schizophrenia, anxiety, depression, eating disorders, bipolar disorder, personality disorders, and (from the “Other” category) mental health, post-traumatic stress disorder, and panic attack. ¶ Includes heart attack and (from the “Other” category) heart disease, heart disease/anaemia, heart disease/pneumonia, heart disease/surgery, heart failure/arrhythmia, heart failure, heart problem, heart surgery, surgery/heart problem. ◆

(aOR, 2.4; 95% CI, 1.03–5.6); there was no significant difference in the odds of admission with depression (aOR, 3.3; 95% CI, 0.5–20), nor with physical health disorders or injury (Box 2).

Participants who reported maltreatment were more likely to have visited general practitioners six or more times (aOR, 2.37; 95% CI, 1.87–3.02) and to have consulted a psychiatrist (aOR, 3.02; 95% CI, 2.25–4.04), a psychologist (aOR, 2.40; 95% CI, 2.00–2.88), or a mental health nurse (aOR, 2.67; 95% CI, 1.75–4.06). They were also more likely to have had at least one consultation with any medical specialist (aOR, 1.23; 95% CI, 1.08–1.40) and made six or more visits to allied health professionals (aOR, 1.60; 95% CI, 1.31–1.94) (Box 3).

Maltreatment during childhood, by type

After adjusting for all other types of maltreatment, as well as for socio-demographic characteristics, financial hardship (childhood and current), and geographic remoteness, the odds of overnight hospital admission during the preceding twelve months were higher for participants who reported sexual abuse (aOR, 1.24; 95% CI, 1.03–1.50) or physical abuse (aOR, 1.21; 95% CI, 1.00–1.46) (Box 1). The relative likelihood of hospitalisation with a mental disorder (compared with people who reported no maltreatment) was highest for people who reported emotional abuse (aOR, 2.30; 95% CI, 1.05–5.06); the likelihood of hospitalisation because of suicide risk was also higher in this group, but not statistically significantly (aOR, 1.82; 95% CI, 0.79–4.19). Participants who reported neglect were more likely to have been hospitalised with stroke (aOR, 5.52; 95% CI, 1.40–21.5) or alcohol-related problems during the preceding twelve months (aOR, 15.9; 95% CI, 1.00–179) (Supporting Information, table 3). The odds of six or more visits to general practitioners was highest for people who reported sexual abuse (aOR, 1.75; 95% CI, 1.33–2.32) (Supporting Information, table 4).

Multiple types of maltreatment during childhood

The likelihood of visits to health care professionals generally increased with the number of maltreatment types reported, but the differences between strata (ie, two v one types, or three or more v two types) were often not statistically significant. For example, compared with respondents who reported no maltreatment, the odds of at least one consultation with a psychiatrist, psychologist, or mental health nurse, and of six or more visits to general practitioners in the past twelve months, were each greater for people who reported three or more types of maltreatment than for those who reported two types or one type, but the confidence intervals for the respective estimates overlapped (with the exception of consultations with psychologists). Participants who reported three or more types of maltreatment were more likely to report 24 or more consultations with health care professionals during the preceding twelve months (v no maltreatment: aOR, 3.29; 95% CI, 2.61–4.13) than respondents who reported two types (aOR, 2.02; 95% CI, 1.55–2.62) or one type (aOR, 1.68; 95% CI, 1.31–2.17) (Box 4, Box 5).

Differences in odds ratios between partially and fully adjusted models

After adjusting for geographic remoteness and socio-economic status in the fully adjusted model, the relative odds for people

3 Likelihood of consultations with health care professionals during preceding twelve months (maltreatment reported v not reported)*

Consultation type	Adjusted odds ratio (95% CI)	
	Partial [†]	Full [‡]
At least one visit to psychologist	2.69 (2.26–3.21)	2.40 (2.00–2.88)
At least one visit to psychiatrist	3.37 (2.52–4.49)	3.02 (2.25–4.04)
At least one visit to mental health nurse	3.16 (2.10–4.75)	2.67 (1.75–4.06)
At least one visit to any medical specialist	1.28 (1.13–1.45)	1.23 (1.08–1.40)
1–5 visits to general practitioners	1.33 (1.10–1.61)	1.37 (1.12–1.67)
6 or more visits to general practitioners	2.66 (2.12–3.35)	2.37 (1.87–3.02)
1–5 visits to allied health professionals	1.41 (1.20–1.64)	1.35 (1.14–1.59)
6 or more visits to allied health professionals	1.74 (1.44–2.09)	1.60 (1.31–1.94)
12 or more visits to any health practitioner	2.03 (1.78–2.31)	1.83 (1.60–2.10)
24 or more visits to any health practitioner [§]	2.64 (2.17–3.20)	2.29 (1.87–2.80)

CI = confidence interval. * The raw data underlying the adjusted odds ratios are included in the Supporting Information, table 2. † Adjusted for age group, and sex. ‡ Adjusted for age group, sex, socio-economic status, financial hardship (childhood and current), and geographic remoteness. § Includes people with twelve or more visits. ◆

4 Likelihood of overnight hospital admissions and repeated consultations with health care professionals during preceding twelve months, by number of maltreatment types reported (v no maltreatment reported)*

Health service use	Adjusted odds ratio (95% CI)	
	Partial [†]	Full [‡]
Admitted overnight to hospital at least once		
One maltreatment type	1.23 (0.99–1.54)	1.22 (0.98–1.52)
Two maltreatment types	1.55 (1.22–1.96)	1.43 (1.12–1.82)
Three to five maltreatment types	1.84 (1.50–2.24)	1.58 (1.26–1.96)
12 or more consultations with health care professionals		
One maltreatment type	1.41 (1.19–1.67)	1.38 (1.17–1.63)
Two maltreatment types	1.98 (1.65–2.37)	1.81 (1.50–2.18)
Three to five maltreatment types	2.89 (2.47–3.39)	2.53 (2.13–2.99)
24 or more consultations with health care professionals [§]		
One maltreatment type	1.73 (1.35–2.22)	1.68 (1.31–2.17)
Two maltreatment types	2.29 (1.78–2.95)	2.02 (1.55–2.62)
Three to five maltreatment types	3.91 (3.16–4.84)	3.29 (2.61–4.13)

CI = confidence interval. * The raw data underlying the adjusted odds ratios, and for specific reasons for hospital admission and specific consultation types, are included in the Supporting Information, tables 5 and 6. † Adjusted for age group, and sex. ‡ Adjusted for age group, sex, socio-economic status, financial hardship (childhood and current), and geographic remoteness. § Includes people with twelve or more visits. ◆

maltreated during childhood reporting any overnight hospitalisation during the preceding twelve months with depression (3.3; 95% CI, 0.5–20 v 3.6; 95% CI, 0.6–21) or any mental disorder (2.4; 95% CI, 1.03–5.6 v 2.7; 95% CI, 1.1–6.5) were moderately lower than in the partially adjusted models; the adjusted odds ratio for suicide risk was much lower (1.4; 95% CI, 0.6–3.3 v 3.8; 95% CI, 0.8–18) (Box 2).

For six or more general practitioner consultations, the adjusted odds ratios were similarly smaller in the fully adjusted model (2.37; 95% CI, 1.87–3.02 v 2.66; 95% CI, 2.12–3.35), but that for 1–5 visits to general practitioners was moderately larger (1.37; 95% CI, 1.12–1.67 v 1.33; 95% CI, 1.10–1.61) (Box 3). The likelihood of hospital admission and high numbers of health care consultations for participants who reported three or more types of maltreatment were also moderately smaller after full

adjustment, except for overnight hospital admission because of suicide risk; the adjusted odds ratio was larger and statistically significant in the partially adjusted model (5.22; 95% CI, 1.10–25.7) but not significant after full adjustment (2.15; 95% CI, 0.81–5.75) (Box 5).

Discussion

We report the first investigation of associations between child maltreatment and health service use for a representative sample of Australians aged 16 years or more. ACMS data enabled us to disaggregate outcomes by type of maltreatment, and by number of maltreatment types, and to control for several factors. We found that child maltreatment was associated with greater likelihood of hospital admission with mental disorders and

5 Likelihood of overnight hospital admissions and consultations with health care professionals during preceding twelve months for participants who reported three to five types of maltreatment (v no maltreatment reported)*

Health service use	Adjusted odds ratio (95% CI)	
	Partial [†]	Full [‡]
Admitted overnight to hospital at least once	1.84 (1.50–2.24)	1.58 (1.26–1.96)
Reasons for overnight hospital admissions		
Any mental disorder [§]	4.30 (1.80–10.4)	3.71 (1.50–9.19)
Anxiety	0.81 (0.28–2.34)	0.89 (0.34–2.34)
Depression	4.39 (0.70–27.6)	4.19 (0.60–30.3)
Drug-related problems	2.67 (0.40–16.4)	1.22 (0.17–8.81)
Alcohol-related problems	0.51 (0.12–2.10)	1.40 (0.30–6.62)
Suicide risk	5.22 (1.10–25.7)	2.15 (0.81–5.75)
Heart disease [¶]	2.27 (1.05–4.90)	1.28 (0.53–3.11)
Injury or results of injury	1.09 (0.68–1.76)	1.03 (0.62–1.72)
Asthma or chronic bronchitis	0.93 (0.23–3.83)	0.74 (0.21–2.67)
Diabetes	1.12 (0.21–5.99)	0.30 (0.04–2.44)
Cancer	1.18 (0.47–2.97)	1.38 (0.53–3.56)
Stroke	1.21 (0.41–3.62)	0.72 (0.21–2.54)
Consultations with health care professionals in the past twelve months		
At least one visit to psychologist	3.93 (3.23–4.78)	3.49 (2.83–4.31)
At least one visit to psychiatrist	4.55 (3.33–6.21)	3.95 (2.87–5.44)
At least one visit to mental health nurse	4.53 (2.95–6.96)	3.60 (2.28–5.69)
At least one visit to any medical specialist	1.51 (1.29–1.76)	1.45 (1.22–1.71)
1–5 visits to general practitioners	1.38 (1.06–1.79)	1.48 (1.11–1.98)
6 or more visits to general practitioners	3.68 (2.75–4.91)	3.27 (2.37–4.52)
1–5 visits to allied health professionals	1.62 (1.33–1.96)	1.53 (1.24–1.90)
6 or more visits to allied health professionals	2.36 (1.90–2.92)	2.14 (1.69–2.71)

CI = confidence interval. * The raw data underlying the adjusted odds ratios are included in the Supporting Information, tables 5 and 6. † Adjusted for age group, and sex. ‡ Adjusted for age group, sex, socio-economic status, financial hardship (childhood and current), and geographic remoteness. § Includes schizophrenia, anxiety, depression, eating disorders, bipolar disorder, personality disorders, and (from the "Other" category) mental health, post-traumatic stress disorder, and panic attack. ¶ Includes heart attack and (from the "Other" category) heart disease, heart disease/anaemia, heart disease/pneumonia, heart disease/surgery, heart failure/arrhythmia, heart failure, heart problem, heart surgery, surgery/heart problem. ◆

frequent consultations with health care professionals. These findings are consistent with those of overseas studies,³⁻⁵ and with other reports that child maltreatment is associated with increased health service use.⁷⁻¹⁰

The few studies that have examined relationships between specific child maltreatment types and later health service use have found increased health care use and costs only in relation to neglect and physical and sexual abuse.⁷⁻¹¹ Our findings confirm those of these studies, which found that the likelihood of hospitalisation was higher after physical and sexual abuse, after adjusting for experience of other maltreatment types. In addition, our study builds on other reports^{9,10} with our findings of increased likelihood of hospital admission with mental health problems and of consultations with health professionals for people who report multiple types of maltreatment during childhood. The odds of 24 or more consultations with health care professionals during the preceding twelve months were greatest for people who had experienced three or more forms of child maltreatment.

finding might be explained by the fact that we did not analyse health service use by age group, and physical disorders would have been less prevalent in our sample because of our oversampling of people aged 16–24 years. Further, many conditions can be managed in primary care (eg, asthma, diabetes), reducing the need for hospitalisation.²⁵ The COVID-19 pandemic may also have altered health service use patterns. However, child maltreatment was associated with greater likelihood of large numbers of health care visits during the preceding twelve months, including to general practitioners and specialists, conceivably for both mental and physical health reasons. To complement our analysis, focused on health service use, it will be important that future ACMS analyses explore the relationship between child maltreatment and later physical health outcomes.

Child maltreatment was not associated with increased likelihood of hospital admission with injuries. One reason is that the sample did not include children under 16 years of age. Physical injury caused by maltreatment is common, especially during early childhood. A study of children's hospital admissions in Western Australia during 1980–2005 found that 97% of

maltreatment-related admissions involved injuries, predominantly in children aged 0–6 years.²⁶

Child maltreatment can increase health service use via several intersecting pathways. Effects on brain development and epigenetic and neurobiological changes increase lifelong risk for physical and mental disorders; moreover, coping mechanisms, such as smoking and alcohol and drug use, can lead to injury and disease.^{27–31} Mental disorders and substance use during adolescence can also influence the impact of maltreatment history on health service use in adulthood. The ACMS found associations between child maltreatment and mental disorders that emerged during early adulthood.¹⁷ A prospective cohort study in the United States, with data collected at four time points, similarly found that the relationship between child maltreatment and increased health service use was partly explained by the increased risk of developing mental disorders; maltreated people with major depression or who used drugs during young adulthood (approximate age at follow-up, 29 years) were significantly more likely to use general medical services in middle adulthood (approximate age at follow-up, 41 years).⁹

Defining the contribution of child maltreatment to poor health and increased health service use is challenging, given the likely contribution of other factors, including socio-economic disadvantage, place of residence and access to health services. Access to health services is also influenced by socio-economic status.³² In addition, Australians living in rural and remote areas have lower life expectancy, poorer health outcomes, higher disease and injury burdens, and less access to and use of health services.³³ Poorer health outcomes in rural and remote areas may also be related to poor nutrition, smoking and alcohol use, education and employment disadvantage,³³ and higher rates of violence; people in remote areas are 24 times as likely to be hospitalised because of domestic violence than residents of major cities.³⁴

Applying two separate levels of model adjustment allowed insights into the contributions of geographic remoteness and socio-economic status as potential confounders affecting the relationship between maltreatment and health service use. We found that although most associations remained statistically significant after full adjustment, the odds ratios were generally smaller after full than partial adjustment, suggesting that remoteness and financial security influence these complex relationships.

Residual and unmeasured confounding may have affected our findings. Interactions between genetic and environmental factors influence the predisposition to mental disorders.^{35,36} Child maltreatment may also be a marker of other household dysfunction that influences health outcomes and subsequent health service use. A recent systematic review found that the risks of health risk behaviours, mental disorders, substance use, self-directed violence, and non-communicable diseases were greater for people who reported four or more adverse childhood experiences, including maltreatment but also household mental illness, parental divorce, household criminality, and bullying.³⁷ Further research is needed to understand the role of mediating and moderating variables and to ensure adequate adjustment of analyses for lifetime confounders. Future ACMS analyses will explore these relationships after adjusting for factors such as parental mental health and substance use, and peer bullying.

Similarly, protective factors — resilience, supportive family environments, safe schools and neighbourhoods — reduce the risks of the long term consequences of maltreatment.^{31,38} Early,

targeted interventions are vital, not only for supporting children directly, but also for their longer term wellbeing and reducing health system use. Integrated physical and psychological support and health care is needed to reduce the morbidity caused by maltreatment and to improve long term health.

Limitations

Despite our large sample, small cell sizes for some reasons for hospital admission mean that some results should be interpreted with caution. Recall bias is possible, as some participants were asked to report on long passed events; however, moderate to good consistency of reports over time and under- rather than overreporting of maltreatment has been described.³⁹ Participants with poor health may be more likely to disclose maltreatment,⁴⁰ but we assessed maltreatment before health in the questionnaire to limit this bias. Measurement bias and questionable reliability of self-reported health service use may also affect our findings.

The health service use items we used and methodology were based on those of the 2007 Australian National Survey of Mental Health and Wellbeing.²¹ We did not use the diagnostic criteria of the International Statistical Classification of Diseases (ICD-10) or the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) for the hospitalisation health reasons because many participants would be unable to report at this formal level; for example, they may not know whether an admission was for ischaemic or hypertensive heart disease, but could report that it was for “heart disease”. Self-report of health service use assumed participants knew enough to be able to report reasons for hospital admission from a list of nine major mental health and eleven physical health conditions (including “other”). Finally, the COVID-19 pandemic may have influenced patterns of health service use, particularly hospital admissions, during the data collection period. A systematic review found that health care use declined around the world by about one-third during the COVID-19 pandemic.⁴¹

Conclusion

The ACMS provides evidence that child maltreatment increases health service use later in life, particularly for people who have experienced multiple types of maltreatment. Better prevention strategies and targeted support for children and families at risk are needed. In addition, a more nuanced understanding of how the complex interactions between child maltreatment and individual and environmental protective factors affect health and wellbeing across life is needed to design effective strategies for improving long term outcomes. Our findings also enable timely quantification of the substantial lifetime economic and social costs of child maltreatment in Australia.

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the research team. It will be made available under a Creative Commons licence after an embargo period. ■

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Supporting Information

Additional Supporting Information is included with the online version of this article.

A new era in child maltreatment prevention: call to action

The Australian Child Maltreatment Study provides evidence demanding generational public health reform for national benefit

Some 60 years have passed since scientific awareness of child maltreatment in Australia first stirred.¹⁻⁴ Since then, in various domains, progress has been made in responding to child maltreatment. Yet, to our society's great cost, we have until now lacked the necessary evidence on its population-wide prevalence and associated health outcomes to inform national prevention policy.

As reported in this supplement, the Australian Child Maltreatment Study (ACMS) has obtained the first evidence of the national prevalence of all five forms of child maltreatment (physical abuse, sexual abuse, emotional abuse, neglect, and exposure to domestic violence),⁵ and of multi-type maltreatment.⁶ The ACMS also measured associated mental disorders,⁷ health risk behaviours,⁸ physical health problems and health service use⁹ across age groups.

By surveying 8500 Australians aged 16 years and over,¹⁰ the ACMS has uncovered the past, discovered the present, and indelibly stamped an imperative to transform the future. Its findings have revealed the true magnitude of child maltreatment and its devastating reverberations through life. Moreover, it has shown that despite increased awareness and isolated improvements over time, the majority of Australians continue to be maltreated in childhood.⁵⁻⁸

Main findings from the ACMS

Selected findings highlight the scale of the national challenge but illuminate a path forward.

- Child maltreatment is endemic.** Sample-wide prevalence rates were: physical abuse, 32.0%; sexual abuse, 28.5%; emotional abuse, 30.9%; neglect, 8.9%; and exposure to domestic violence, 39.6%.⁵
- Multi-type maltreatment is common.** 39.4% of participants experienced two or more types of child maltreatment, and 23.3% experienced three to five types.⁶
- Contemporary youth are suffering.** Compared with older participants, those aged 16–24 years reported even higher prevalence of emotional abuse (34.6%), neglect (10.3%), and exposure to domestic violence (43.8%). Although some declines have occurred in physical and sexual abuse, over one in four young Australians have experienced physical abuse (28.2%) or sexual abuse (25.7%).⁵ Further, 25.4% of 16–24-year-olds experienced three to five maltreatment types, mirroring those aged 25–44 years (25.7%).⁶
- A national gender disparity exists.** Women experience significantly more childhood sexual abuse, emotional abuse, and neglect, and
 - comparable levels of physical abuse and exposure to domestic violence.⁵ The prevalence of multi-type childhood maltreatment is also significantly greater in women.⁶
- Child maltreatment is associated with a massive mental health burden.** Using diagnostic criteria, we found significantly higher prevalence of mental health disorders in participants who experienced child maltreatment (48.0% *v* 21.6%).⁷ This applied for lifetime major depressive disorder (MDD; 24.6% *v* 8.1%); current generalised anxiety disorder (GAD; 16.1% *v* 4.3%), and current severe alcohol use disorder (AUD; 6.1% *v* 1.9%). After full adjustment for a range of other factors (age group, sex, socio-economic status, financial hardship in childhood, and current financial strain), those with maltreatment were almost three times more likely to experience GAD, severe AUD, and MDD, and nearly five times more likely to have post-traumatic stress disorder (PTSD).⁷
- Child maltreatment produces substantial health risk behaviours.** Participants who experienced child maltreatment were four times more likely to have self-harmed in the previous year, four times more likely to have attempted suicide in the previous year, and six times as likely to be dependent on cannabis.⁸
- Adolescence is a deeply painful stage of life for many Australians.** The mental health disorders and health risk behaviours associated with child maltreatment crystallise early in life. In participants aged 16–24 years, MDD, GAD, severe AUD, and PTSD were much more prevalent in those who experienced child maltreatment. Similarly, all health risk behaviours were observable in those aged 16–24 years.⁸
- There is a national crisis in self-harm and suicide attempts.** Tragically, 30.5% of participants aged 16–24 years had self-harmed in their lifetime, comprising two in five females (39.5%) and one in five males (20%).¹¹ Prior year prevalence of self-harm for those aged 16–24 years experiencing maltreatment was 14.3%, compared with 3.0% for those without.⁸ Prior year prevalence of suicide attempt for those aged 16–24 years experiencing maltreatment was 5.2%, compared with 0.6% for those without.⁸
- Maltreatment has enduring effects through life.** Participants who experienced child maltreatment were three times as likely to have any mental health disorder at ages 16–24, 25–44, and ≥45 years.⁷ Similarly, health risk behaviours persist; beyond age 24, maltreatment is likely the strongest risk factor
 - comparable levels of physical abuse and exposure to domestic violence.⁵ The prevalence of multi-type childhood maltreatment is also significantly greater in women.⁶

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for cannabis dependence, self-harm, and suicide attempts.⁸

- **Sexual abuse and emotional abuse are especially harmful.** Sexual abuse rightly receives considerable policy attention. However, emotional abuse is as widespread, and enormously damaging. These two types of maltreatment produced the highest likelihood of self-harm, suicide attempts, cannabis dependence, smoking,⁸ and significantly increased odds of MDD, GAD, and PTSD.⁷
- **Increased health service use places considerable strain on our health system.** The one-quarter of Australians who experience three to five types of child maltreatment are over three times as likely to see a general practitioner six or more times a year, and 3.7 times more likely to be admitted overnight to hospital for mental disorders.⁹

We should all be shaken by these findings. These data represent deep human suffering resulting from interpersonal harm to our most vulnerable citizens. Australian boys are suffering, and our girls are suffering even more; the ACMS findings echo other studies of mental health in Australia,¹² and international calls for action against gendered violence.¹³ The adverse outcomes of child maltreatment are often severe, taking root in adolescence and cascading through life. Sexual abuse prevalence and outcomes show that despite recent reductions (likely due to policy reform and greater attention),^{5,14} we are duty-bound to redouble our efforts. Physical abuse remains all too common. With two in five children also exposed to domestic violence, there is no denying that home is unsafe for many Australians. The new findings about the searing impact of emotional abuse demand a revolution in our relational world, requiring change in what we say to our children, and how we say it.

We must resolve to use this evidence to inform enhanced public health prevention policy and clinical practice in health professions, and other sectors including child welfare and education. With such resolution and solidarity, we can advance fundamental goals of a liberal democracy, providing more children and adolescents the special priority they deserve,¹⁵⁻¹⁶ diminishing corrosive disadvantage and trauma, and supporting the capacities required for good lives and intergenerational flourishing.¹⁶

A call to action

We all surely want a society where children are safe and healthy. This bedrock human impulse is supported by major national policies. Reducing child maltreatment and its effects is consistent with the National Framework for Protecting Australia's Children,¹⁷ the National Plan to Reduce Violence against Women and their Children,¹⁸ the National Agreement on Closing the Gap,¹⁹ and the National Strategy to Prevent and Respond to Child Sexual Abuse.²⁰ The National Framework aims to reduce child abuse and neglect, and seeks a national approach to early intervention and high quality targeted support for children and families. These policy settings are

consistent with broader international goals to reduce maltreatment and respond effectively, including United Nations Sustainable Development Goal 16.2, which aims to end all forms of violence against children.^{21,22}

Yet, to date, we have clearly not done enough.

Some may point to resource constraints, but the economic argument demands change. Strategic thinking should see child maltreatment prevention as an enduring nation-building imperative. The reality is that we must invest more, and invest better. In 2020, the Productivity Commission estimated the annual national cost of mental ill-health and suicide at \$200–220 billion.²³ The ACMS findings indicate that child maltreatment contributes substantially to this crippling national health and economic burden. The findings also respond to calls to better understand the risk factors contributing to mental disorders in 16–24-year-olds,^{24,25} and advance an emerging consensus for greater investment in adolescent health and wellbeing.^{26,27}

The Productivity Commission's recommendations included prevention and intervention early in life and early in the course of ill-health, including support for new parents, socio-emotional development of school children, and a whole-of-government commitment to a new National Mental Health and Suicide Prevention Plan. The Albanese Labor Government elected in 2022 intends to create and assess budget measures to include welfare at individual and societal levels.²⁸ Child and adolescent safety and health must be at the forefront of such initiatives.

Prevention of child maltreatment also offers long term intergenerational benefits. Left unchecked, maltreatment produces intergenerational disadvantage through increased risks of mental disorders in the offspring of parents who experienced child maltreatment,²⁹ emotional and behavioural dysregulation,³⁰ and maltreatment and associated disease burden.³¹ Improved prevention therefore presents an enormous opportunity to curtail the epidemic of mental disorders afflicting Australians.

We must accelerate a public health approach

These policy settings are consistent with a public health approach. This is fitting, since the central mission of public health is to improve health, promote social justice, and prioritise human rights, taking special care to advance the health of the most vulnerable.³² Governments have a responsibility to boost prevention at the population level, respond to high risk categories, and limit health impacts after the event. Successful prevention approaches are those supported by evidence of effectiveness, scaffolded by the full range of public health law mechanisms.³³ We need coordinated implementation of responses by government and non-government agencies and communities, with genuine commitment to prevention and early intervention, responses to root causes of violence, and monitoring of efficacy.^{32,34}

Systematic efforts using an ecological approach

Models for responses to violence against children recognise that systematic, networked efforts are required using an ecological approach. This necessitates responses in individual, community and societal domains to promote education and skill development, enhance parenting, change harmful attitudes and create norms that protect children, provide social and therapeutic services, and improve laws and policies to support individuals and families.^{35,36} Protective factors can be enhanced by fostering supportive relationships, safe environments with predictable home routines, and school and social connectedness.^{37,38}

Mechanisms for these efforts exist through policy and programmatic efforts, supported by public health law.^{32,33} At the societal level, leverage for change is offered by recalibrating broad policy settings,³⁴ such as in housing, taxation, parental leave, and access to childcare and early childhood education, which can ameliorate some of the circumstances heightening the likelihood of some types of maltreatment. At the community level, key stakeholders need support to enable appropriate responses to child maltreatment. For example, health practitioners require pre-service training and ongoing education to identify and treat maltreatment. Similarly, educational practitioners need to be equipped to provide trauma-informed responses, and avoid harmful responses such as school exclusion, as do those providing services to children and youth involved in child welfare systems.³⁹ At the individual level, informed by the differential aetiology of maltreatment types, support is needed for parents in prenatal and postnatal periods and in early childhood, and skill development can be embedded within school curricula, such as through programs fostering respectful relationships and sexual abuse prevention.⁴⁰

While aimed at maltreatment reduction, framing these efforts as promotion of healthy child development can enhance engagement by parents and other program participants, as well as funding agencies, community stakeholders, and other agencies.³⁴ Similarly, primary and secondary prevention may be best couched as elevating equality of opportunity.³⁴

Program prioritisation

Effective program prioritisation and alignment is vital,⁴¹ and selection of policy levers and programs must strike a balance between being evidence-based and community-driven. While evidence-based interventions remain scarce,⁴² solid consensus exists about optimal approaches^{34,42,43} and protective factors.³⁷ Evidence indicates cost-effectiveness of family support models addressing psychosocial risk factors for child physical and emotional abuse.^{44,45} More generally, home visiting and family support programs, and parenting education programs, can reduce some types of maltreatment^{42,46-53} and can be cost-effective.⁵⁴ However, to date, home visiting programs typically focus only on physical abuse and neglect,⁴³ appear less effective in complex situations,⁵⁵

seem more effective at reduction of maltreatment than prevention, and require stronger evidence of key characteristics.^{56,57} These limitations, together with the salience of infancy and early childhood as key developmental stages and pressure points for parents, attest to the need for accelerated investment in support for all new parents to ascertain individualised needs and create a culture promoting equal opportunity in child health and parental capacity, which can then extend to other key transition points.^{34,46}

Challenges

The ACMS data indicate a massive level of service need in the population, and higher rates of maltreated children than those in officially substantiated cases.⁵⁸ Challenges include intergenerational disadvantage, parental mental health, alcohol use and substance use, all of which influence risk of child maltreatment⁶ and parental capacity to access preventive services. Responding to current health needs is a huge challenge; children and adolescents urgently require better access to health services,⁵⁹ as do adults.⁹ National workforce shortages in health and education have been longstanding and exacerbated by the COVID-19 pandemic. Coordinating policy responses across large geographical areas is difficult, and federation poses further challenges. These problems are not easily or quickly soluble.

Yet, it is within our capacity to do better, and we must respond to this challenge at the generational level. Progress has been made — most notably in declines in physical abuse⁵ — and more is possible. Many more children and families receive support now than in former generations,^{60,61} although further refinement of differential response can enhance provision of support to families in need where children are not at significant risk of harm, rather than unnecessarily involving them in statutory processes.⁶¹ Balanced consideration shows the ACMS findings are not all negative. Around one-third of all participants (37.8%) reported no child maltreatment,⁶ and not all who experienced it developed equivalent adverse outcomes.⁷⁻⁹ Consequences of child maltreatment are buffered by many factors, and those who experience it should not be stigmatised or considered bound to deleterious outcomes, but identified early and supported as needed. National prevention initiatives for child and youth mental health have already been initiated in early learning services and schools.⁶² These educational settings are promising locations for supports; in the United States, large-scale school-based mental health responses have been implemented, with more urged, to respond to a state of emergency in child mental health.⁶³

Conclusion

Reducing child maltreatment poses formidable challenges but is a moral imperative and an economic necessity. Children's safety and health are core responsibilities held by governments, institutions and individuals. Reducing child maltreatment and supporting better health outcomes demands that we recalibrate political priorities and social norms, and

promote the security and health of our most vulnerable citizens. This is our collective responsibility — to forge this paradigm shift we need political will, public awareness and participation, practitioner capacity, and parent engagement.

We can and must invest more, and wisely, in universal prevention at the population level, and in targeted, effective interventions for subpopulations at high risk. Long term benefits will far outweigh short term costs. At the primary prevention level, two of the ten greatest public health achievements of the 20th century were produced in connected fields — family planning, and healthier mothers and babies.⁶⁴ If we so resolve, advances in child maltreatment prevention and child and adolescent mental health can be a signal achievement of the 21st century.

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