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Estimating the alcohol-related burden of child maltreatment among Māori in Aotearoa, New Zealand

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Abstract

Introduction: To assesses the alcohol-related burden of child maltreatment among Māori in Aotearoa New Zealand. We compared the risk of child maltreatment among Māori (0–17 years) exposed to parents with alcohol-related hospitalisation or mental health/addiction service use. We also conducted a sensitivity analysis to estimate the number of cases of maltreatment that could be attributed to alcohol among Māori.

Methods: A cohort study of 16,617 Māori aged 0–17 and their parents from 2000 to 2017 was conducted using the Statistics New Zealand Integrated Data Infrastructure. A Bayesian piecewise exponential model estimated the risk of time to first child maltreatment event. This analysis used data from child protection, hospital, mortality and police records, and specifically focused on the risk associated with exposure to parents with an alcohol-attributable hospitalisation or mental health/addiction service use event. Potential confounders for both parents and Māori (0–17 years) were included. We calculated a population-attributable fraction to estimate the proportion of maltreatment cases that could be attributed to alcohol in 2017.

Results: Results showed a 65% increased risk for young Māori exposed to parents with heavy alcohol use. We estimated 17% of substantiated child maltreatment among Māori could be attributed to parental hazardous alcohol consumption.

Discussion and Conclusions: Severe or hazardous alcohol consumption among parents is a risk factor for child maltreatment among Māori. Māori alcohol consumption and harm are symptomatic of wider inequities related, among other things, to the ongoing effects of colonisation, as well as gaps in the regulation of alcohol sales.

KEYWORDS
alcohol, child maltreatment, Māori

1 | INTRODUCTION

Alcohol use can cause harm not only to the drinker but also to others including children [1]. In this study, we focus on the alcohol-attributable burden of child maltreatment among Māori, the Indigenous population of Aotearoa New Zealand. Previous research has documented an increased risk of child maltreatment where caregivers are heavy drinkers [2–5], however, studies estimating the burden of disease for alcohol and child maltreatment are rare as calculations have been limited by a lack of available risk estimates from meta-analyses [6] to allow for these calculations. Child maltreatment is a significant aspect of alcohol's harm to others, making a systematic approach to measurement important. To our knowledge, no studies have estimated the alcohol-attributable burden of child maltreatment among Indigenous populations including Māori.

Heavy use of alcohol by parents can place children at increased risk of harm. Alcohol consumption can affect a parent's ability to safeguard their children, either by altering their behavior and attention or by impairing their ability to safeguard their children from others [4]. Heavy alcohol consumption is a causal factor in aggression and violence [7] and a risk factor for maltreatment in Aotearoa [6]. Overall, however, alcohol seems to contribute to maltreatment as part of a cluster of precipitating factors such as socioeconomic status, other drug use and mental health status [4, 6].

In exploring alcohol and child maltreatment among Māori in Aotearoa, it is critical to consider systemic and colonial contributions to these outcomes [8]. We can identify that many factors related to Māori alcohol consumption and harm are symptomatic of wider inequities related to the ongoing effects of colonisation, as well as gaps in the regulation of alcohol sales [8–10]. The negative impacts of the introduction of alcohol during colonisation persists, with communities in which Māori live often saturated with liquor outlets [11] and disproportionate harm experienced [12]. Past experiences in Aotearoa also reveal numerous barriers and the active discouragement of Māori participation in decisions about liquor licensing in communities, despite legislation intending otherwise [13, 14]. Recognising these connections is crucial for contextualising Māori health outcomes and avoiding a deficit-based narrative (i.e., defining people by their problems) [15].

A deficit-based framing can undermine Māori aspirations. Such perspectives overlook the historical and institutional factors driving inequities for Indigenous populations and may assign blame to the very group impacted by these inequities [15]. Deficit framing may also perpetuate power imbalances and stereotypes, such as viewing Māori as a vulnerable population requiring solutions to their problems [16]. Māori have been profoundly negatively affected by colonisation including 'land alienation, economic impoverishment, mass settler immigration, warfare, cultural marginalization, forced social change, and racism' [17, p. 19]. Colonial history has also placed Māori in significantly worse socio-economic conditions than Pākehā (White New Zealander) [18, 19]. Many of these historical and institutional drivers are related to alcohol consumption (and child maltreatment) [8, 20–22]. There has been limited research in Aotearoa assessing parental/caregiver alcohol use and child maltreatment. A survey conducted in 2008 found that at least 17% of children in Aotearoa were reported to experience harm due to another's drinking, which could include parents (including verbal abuse, physically hurt, witnessing intimate partner violence and neglect/unsupervised) [23] and this proportion is higher than estimated in other countries including Australia (12%) and Ireland (11%) [24]. Two previous cohort studies from Aotearoa on the involvement of alcohol in child maltreatment found that between 11% and 15% of substantiated maltreatment could be due to hazardous alcohol use among parents [6] and that alcohol abuse was positively related to physical abuse/assault of a child by a parent/caregiver [25].

This study has two objectives: (i) to assess the risk of child maltreatment among Māori (0–17 years) exposed to parents with an alcohol-attributable hospitalisation or mental health/addiction service use versus those who were not; and (ii) to conduct a sensitivity analysis to determine the proportion of child maltreatment that could be attributed to alcohol among Māori (up to 17 years) in Aotearoa.

2 | METHODS

2.1 | Integrated Data Infrastructure

This study utilises the Integrated Data Infrastructure (IDI), which is linked to registry data in Aotearoa. The IDI aims to capture everyone who has ever been a resident in Aotearoa [19]. By utilising the IDI, this study was able to bring together child maltreatment data from different datasets, as well as different measures of exposure to parental alcohol consumption. The IDI links information across multiple administrative health, service and survey databases, allowing for the linking of Māori (0–17 years) to parents. To safeguard privacy, IDI data is de-identified by removing personal information like names, birth dates, addresses and encrypting identifying numbers [19]. The IDI employs a combination of unique identifier and probabilistic linking methods to

TABLE 1 Data sets, dates and codes used in the Integrated Data Infrastructure (table sourced from [6]).

	Children		Parents	
Datasets	**Dates**	**Variables**	**Dates**	**Variables**
DIA (births, deaths and marriages)	2000	Date of birth, gender, ethnicity & link births to parents	2000	Age at childbirth, gender
Census	2013		2013	Highest qualification, age
Publicly funded hospital discharges	2000–2017	Child maltreatment codes: T74.0, T74.1, T74.2, T74.3, T74.8, T74.9	1995–2017	Alcohol codes: E24.4, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70, K85.2, K86.0, R78.0, T51.0, T51.1, T51.9, X45, X65, Y15, Y90, Y91
		FASD and mental health codes: main codes P04.3, Q86.0, F0, F2-F9		Mental health codes: F0, F2–F9
				Other drug codes: F11- F19
				Suicide attempts/self-harms codes: X6, X7, X80, X81, X82, X83, X84
Mortality	2000–2017	Mortality events	2000–2017	Alcohol codes: same as above
				Other drug codes: same as above
				Suicide attempts/self-harms codes: same as above
Mental health and addictions data (gramm)	2009-2018	Child maltreatment codes: same as above	2009-2018	Alcohol codes: same as above
		Mental health codes: same as above		Mental health codes: same as above
				Other drug codes: same as above
				Suicide attempts/self-harms codes: same as above
Oranga Tamariki (Child, Youth and Family)	2000–2017	Child maltreatment events: emotional or psychological, neglect or abandonment, physical and sexual abuses		
Recorded crime (Offenders) (Victims)	2000–2017	Child maltreatment events: assaults, sexual assaults and family violence events in the household (parent perpertrator)	2000–2017	Child maltreatment events: assaults, sexual assaults and family violence events in the household (children victim)
Children's Action Plan (CAP)	2013–2017	Family violence events in the household		
Customs (border movements)	2000–2017	Last departure		

Abbreviations: DIA, Department of Internal Affairs; FASD, foetal alcohol spectrum disorder.

merge data, which can result in some linkage errors. Nonetheless, research suggests the rate of false positive linkages (i.e., linking records of different individuals erroneously) is less than 1% [26]. Although linkage errors can potentially result in over- or under-coverage of the IDI population, the impact is expected to be minimal [27].

There are important considerations when using Māori data in the IDI. These include 'problems with ethnic identifiers (see limitations), deficit-framed work, community involvement, consent, social licence, further data linkage, offshore access and barriers to access for Māori' [15, p. 190]. There is also more work to be done on the realisation of Māori rights and interests in IDI data [28] and its appropriate and ethical use [15].

2.1.1 | Design

This study is comprised of two parts: (i) calculating a risk estimate for alcohol-related child maltreatment from a cohort study; and (ii) sensitivity analysis to estimate the burden of maltreatment that could be attributable to alcohol.

2.2 | Estimating the risk of alcohol-related child maltreatment among Māori (0–17 years)

2.2.1 | The cohort (risk estimate)

Substantiated child maltreatment was compared between two groups of Māori (0–17 years)—those with a parent with an alcohol-attributable hospitalisation or mental health/addiction event, and those without. The cohort included all Māori live births ($n = 16{,}617$) in 2000 and their parents, followed from birth to age 17 (2000–2017).

2.3 | Measures

2.3.1 | Independent

Instances of hospitalisations and mental health/addiction service utilisation that were 100% attributable [29, 30] to alcohol among parents, which comprised both acute and chronic causes, were recorded between 1995 and 2017 as shown in Table 1. These records also included community-based services. In the model, events that occurred before the childbirth date (1995–2000) were designated as the 'baseline'.

2.3.2 | Dependent

The dependent variable was the age, in years, at which the first substantiated child maltreatment event occurred. Substantiated maltreatment relates to 'instances where allegations of harm are made, a formal investigation or assessment by social workers or Police is undertaken, and maltreatment is found to have occurred' [31, p. 4]. The definition of child maltreatment included various forms such as physical abuse (including child assault), sexual abuse, emotional/psychological abuse, neglect or abandonment, and intimate partner violence in the household, as detailed in Table 1. In our cohort, no deaths among Māori (0–17 years) were coded as maltreatment, but mainly as deaths due to alcohol/drugs use and suicide, so were treated as censored events in addition to departures and end of the study. We also checked the mortality and Police data for assault and homicide deaths; however, there were none in our cohort. Homicide data may be unreliable in the mortality dataset (Pers.com Ministry of Health 2023).

2.3.3 | Potential confounders

We aimed to control for variables that met two criteria: (i) they were associated with the risk factor (alcohol) and independently with the outcome (child maltreatment), but were not on the causal pathway between these variables, as established by previous research [32]; and (ii) they were obtainable from the IDI dataset. With regard to potential confounders for parents, we took into account factors such as drug problems or heavy drug use, mental health diagnoses (as outlined in Table 1), the age of the mother at the time of childbirth (as the correlation with the father's age was high, with a correlation coefficient of 0.72), and the highest level of educational attainment (further details on how this was calculated can be found in the supplementary material of Huckle and Romeo [6]). In cases where both parents' qualifications were classified as 'not specified', they were categorised as 'missing'. Descriptive statistics for the cohort are available in Table 2.

To address potential confounding factors, various considerations were taken into account. Gender and specific child characteristics, which could potentially influence the likelihood of maltreatment and contribute to increased parental stress, leading to increased drinking, were identified from the literature [33, 34] (see Table 1 for codes). Confounders were included in the model as categorical variables, with reference levels defined and outlined in Table 3. Mother's age was segmented into four distinct groups (<19, 20–25, 26–35 and 36+) and included using dummy variables in the analysis.

2.4 | Sensitivity analysis

Assuming a causal link between parental alcohol-related hospitalisation/service use and child maltreatment, we undertook a sensitivity analysis. We estimated an alcohol-attributable admissions/service use fraction- and population-attributable fraction (PAF) for child maltreatment in 2017 among Māori [6]. For the PAF, we used the prevalence of the Alcohol Use Disorders Identification Test 8+ among Māori parents from the 2017 New Zealand Health Survey with a total sample size of 13,869 [35]. The New Zealand Health Survey is conducted through face-to-face interviews, achieving an 80% response rate. The survey oversamples Māori but may still underrepresent Māori [36].

For additional information on the datasets used in this study and their representation of the population in Aotearoa, please refer to Huckle and Romeo [6]. Public hospital access (hospital discharges) and mental health and addictions services (PRIMHD) in Aotearoa are provided free of charge, ensuring comprehensive coverage of the population.

TABLE 2 Descriptives of the cohort of children and parents included in the Bayesian model.

Rangitahi			**Parents**		
Type of first child maltreatment	*n*	Percent	Parental heavy alcohol use	*n*	Percent
Emotional abuse	1515	36.2	Yes	1545	9.3
Neglect	792	18.9	No	15,078	90.7
Physical abuse	438	10.5	Mother age at child birth	*n*	Percent
Sexual abuse	279	6.7	<20	1890	11.4
Assault	60	1.4	20–25	5604	33.7
Family violence	957	22.9	26–35	7410	44.6
Abuse unspecified	144	3.4	36+	1716	10.3
Time to first child maltreatment, years	Mean	SD	Father age at child birth	*n*	Percent
Emotional abuse	7.4	3.8	<20	897	6.1
Neglect	5.3	3.9	20–25	3936	26.6
Physical abuse	8.9	4.5	26–35	6945	46.9
Sexual abuse	11.3	4.0	36+	3030	20.5
Assault	15.3	1.8	Highest qualification	*n*	Percent
Family violence	12.4	2.6	High	1224	7.4
Abuse unspecified	0.2	0.9	Medium	3444	20.7
Gender	*n*	Percent	Low	7320	44.0
Male	8577	51.6	Missing	4635	27.9
Female	8043	48.4	Parental heavy drug use	*n*	Percent
Ethnicity	*n*	Percent	Yes	948	5.7
Māori	16,620	100.0	No	15,672	94.3
FASD or mental health problems	*n*	Percent	Parental mental health problems	*n*	Percent
Yes	462	2.8	Yes	2073	12.5
No	16,158	97.2	No	14,550	87.5
Censored events	*n*	Percent			
Departure	2061	16.6			
End of study	10,188	81.9			
Death	186	1.5			

Abbreviation: FASD, foetal alcohol spectrum disorder.

2.5 | Analysis

To investigate the association between parental hazardous drinking and the age of the first occurrence of child maltreatment, we performed a survival analysis [37, 38]. Using a Bayesian piecewise exponential model we segmented time into distinct periods, assuming a constant hazard rate within each period [6]. 'Specifically, if J is a set of intervals with specified cut-points $a_0, a_1, ..., a_J$, with $a_0 = 0$ and $a_J = \infty$ (infinity), the hazard function at time t, $h(t|\mathbf{x}_i(t))$, for an individual i with predictors $\mathbf{x}_i$, can be written as $h(t|\mathbf{x}_i) = \lambda_j exp(\mathbf{x}_i\boldsymbol{\beta})$, for $a_{j-1} \le t < a_j$, $j = 1, ..., J$. λ_j corresponds to the baseline hazard in the time period $[a_{j-1}, a_j)$, and $\boldsymbol{\beta}$ being the unknown parameters associated with the predictors. Predictors $\mathbf{x}_i$ are considered fixed at baseline or time-dependent, $\mathbf{x}_i(t)$, that is, those where the values differ over time' [6, p. 673]. When modelling time-varying coefficients, we used the Deviance Information Criterion as a selection criterion for the best model. In determining statistical significance, we relied on the 95% credibility interval for each parameter, with value 0 outside of this range indicating significance [6]. For full description of the analysis methods, data software and programs used for analysis, and model diagnostics description please see Huckle and Romeo [6].

The fixed predictors and confounding variables included: parental highest educational attainment, parental past hospitalisation or service use related to alcohol-

TABLE 3 Time to first substantiated maltreatment event among Māori (0–17 years). Bayesian piecewise exponential model. Confidence intervals (CI) are calculated as highest probability intervals.

Effect	Estimate	SE	HR	CI lower HR	CI upper HR
Child gender: female versus male	0.086	0.031	1.090	1.023	1.155
Any child FASD or mental health issue	0.655	0.072	1.929	1.666	2.215
Parental past alcohol admission/service use	0.443	0.080	1.563	1.330	1.815
Parental past heavy drugs use	0.473	0.105	1.614	1.303	1.962
Parental past mental health diagnosis	0.171	0.079	1.191	1.007	1.370
Parental highest qualification					
Low versus high	1.610	0.120	5.041	3.896	6.245
Medium versus high	0.801	0.127	2.247	1.709	2.833
Missing versus high	1.590	0.122	4.940	3.814	6.147
Mother age at childbirth					
<19 versus 36+	0.787	0.074	2.203	1.896	2.521
20–25 versus 36+	0.520	0.068	1.685	1.477	1.917
26–35 versus 36+	0.252	0.069	1.289	1.125	1.458
Parental heavy alcohol use (t)	0.056	0.007	1.058	1.042	1.072
Parental heavy drugs use	0.308	0.073	1.364	1.171	1.560
Parental mental health diagnosis	0.512	0.057	1.671	1.491	1.860
Child genders: female versus male × l (age >14)	0.033	0.015	1.034	1.002	1.061
Overall parental alcohol use effect	0.499	0.081	1.653	1.396	1.911

Abbreviations: FASD, foetal alcohol spectrum disorder; HR, hazard ratio, SE, standard error.

attributable mental health or addiction issues, parental past heavy drug use, parental past mental health diagnosis, and the age of the mother at childbirth, child gender, child characteristics (mental health issues, foetal alcohol spectrum disorder). Time-dependent covariates included: parental alcohol-attributable hospitalisation or service use, parental history of heavy drug use and parental history of mental health diagnosis. In cases where the proportional hazard assumption was not met, we explored time-varying coefficients in the model.

2.5.1 | Missing data

There were two variables with incomplete data in the study—parental highest education and the age of the mother. Around 20% of parents had educational qualification missing. Due to the relatively high percentage of missing data and the assumption that the data were not missing at random, we opted to create a new category (missing) and include these cases in the analysis. For cases where the age of the parents was not available in the DIA data set, we obtained the information from the 2013 Census. Less than 0.05% of cases had missing data for the mother's age at childbirth and were therefore excluded from the modelling.

2.6 | Sensitivity analysis

To estimate the alcohol-attributable fraction for admissions/service use, we considered all Māori aged 0–17 years in Aotearoa with substantiated maltreatment events in 2017. We identified the percentage of these cases where a parent had an alcohol-attributable hospital admission or service use within 3 years before or 1 year after the documented maltreatment. This method is recognised as a sensitive indicator of hazardous alcohol use, given that parental alcohol issues are ongoing before seeking assistance from services [6].

The PAF was estimated using $PAF = P \times (RR - 1) \div [1 + P \times (RR - 1)]$. P is the proportion of Māori parents with hazardous drinking (AUDIT 8+) in the total population in Aotearoa, and RR is the overall risk estimate of alcohol's association with child maltreatment from the cohort. The confidence interval was obtained using Markov Chain Monte Carlo methods within the Bayesian modelling.

2.7 | Ethics

All data are anonymous to the researchers, so ethical approval was not required. We assessed the risk via the Massey ethics screening system and the research was considered low risk (application number: 4000020909).

3 | RESULTS

3.1 | Descriptives

In the cohort, there were 16,617 Māori (0–17 years), 25% of whom ($n = 4182$) had experienced at least one substantiated maltreatment event. First maltreatment events were: 36% emotional abuse, 7% sexual abuse, 11% physical abuse, 19% neglect and abandonment, 23% family violence in the household and 1% assault; 3% were unspecified. Nine percent of parents ($n = 1545$) had an alcohol-attributable hospitalisation or service use for mental health/addiction (see Table 2).

Exposure to parents with an alcohol-attributable hospitalisation or service use was associated with an overall increased risk of child maltreatment of 65.3% among Māori (0–17 years) (Table 3). This risk estimate was comprised of the risk 5 years before birth (56.3%) and the time-varying effects, that is, during the time study (5.8%). These results remained significant despite adjusting for several potential confounders such as parental education, mother's age at childbirth, parental mental health issues and heavy drug use diagnosis (past and current). Some potential confounding factors, such as low education and mothers giving birth before the age of 20, were associated with a greater risk of child maltreatment compared to alcohol-related hospitalisation or service use, as indicated in Table 3.

3.2 | Sensitivity analysis

In 2017, the alcohol-attributable admissions/service use fraction was 17.26% (confidence interval 16.39–18.16%) for child maltreatment (Table 4).

Around 17% of child maltreatment could be attributable to hazardous drinking among Māori (17.29%; confidence interval 11.26–22.83%) (Table 5).

4 | DISCUSSION

This study used alcohol measurements linked to a comprehensive range of substantiated child maltreatment events from several sources of data, for example, child protection, mortality, police and hospitalisations data. However, these data are collected in challenging circumstances, such as during contact with police, child protection services, and therefore carry an inherent deficit focus [15]. Māori are more likely to be hospitalised rather than access primary care [39] and come to attention of child protection than non-Māori [40]. In this context, it is critical to interpret findings within the broad environment [15]. Negative statistics without context can lead to deficit framing and blaming, hindering efforts to address underlying determinants and further stigmatising population groups.

Alcohol negatively impacts Māori communities in various ways in Aotearoa, and these study results indicate that child maltreatment is one of these adverse effects. This study found a 65% increased risk of substantiated child maltreatment if parents had an alcohol-attributable hospitalisation or service-use event and found 17% of child maltreatment among Māori (0–17 years) could be due to exposure to hazardous alcohol consumption. In addition to the effects of colonisation, past and present, gaps in the regulation of alcohol sales in Aotearoa have been identified [8–10] as contributing to adverse effects of alcohol on Māori. Claims at the Waitangi Tribunal [41] regarding Crown (judicial authority) breaches of Te Tiriti o Waitangi (Treaty) promises, highlight the Crown's [42] failure to implement effective alcohol legislation and ensure Māori have a place in licensing decisions regarding outlets in their communities. In 2023, new laws were introduced intended to enhance Māori participation in licensing decisions [43].

Our results also show that severe or hazardous alcohol consumption contributes to child maltreatment amid various precipitating factors. Some of these included

TABLE 4 Alcohol-attributable admissions/service use fraction in 2017.

Measure	Yes	No	Total	AAF %	95% lower CI	95% upper CI
Alcohol-attributable admissions/service fraction	1230	5895	7125	17.26	16.39	18.16

Abbreviations: AAF, alcohol-attributable fractions; CI, confidence interval.

TABLE 5 Population-attributable fraction in 2017.

Measure	Prevalence %	PAF %	95% lower CI	95% upper CI
Hazardous drinking among Māori parents (AUDIT 8+)	32.01	17.29	11.26	22.83

Abbreviations: AUDIT, Alcohol Use Disorders Identification Test; CI, confidence interval; PAF, population-attributable fraction.

lower educational level, younger age at childbirth and parental drug use and mental health diagnoses. Lower educational attainment had the largest relationship with child maltreatment. For Māori, colonisation saw the confiscation and violent alienation of land and resources, causing economic impoverishment [17]. British laws and culture were enforced and western education was imposed with Māori excluded from the curriculum [44]. This had profound impacts on Māori and has meant that many Māori continue to live under considerable socioeconomic constraint [17]. This socioeconomic constraint has previously been linked to a higher risk of child maltreatment in Aotearoa [6, 18], including contributing to high numbers of young Māori in state care across generations [18].

It is critical to provide cautions about how we address these issues, particularly where the solutions might lie. If we solely focus on whanau (family) from a deficit perspective, we will not address underlying causes and societal responsibilities which drive the 'problems' [45]. While supporting targeted interventions for whanau is important, exclusive focus in this area risks perpetuating the conditions reflected in statistics; therefore, a multi-level approach is appropriate. For example, these findings may enable Māori communities to identify what kinds of actions or regulation can be developed regarding alcohol. Targeted approaches could include supporting parental recovery from severe or hazardous alcohol use and trauma and prenatal care programs. However, it is important that solutions are not just targeted. Effective alcohol policies, such as reducing oversupply, have been recommended by enabling Māori participation in licensing decisions for outlets in their communities [46]. Additionally, incorporating mana whenua, the customary authority exercised by an iwi or hapu in an identified area [47] in co-designing local alcohol policies, affecting licensing in areas [46], can mitigate alcohol harm, particularly with Indigenous-led initiatives [48]. To address underlying determinants, we also need to consider prevention and the solutions that lie within Māori communities, particularly in supporting whanau to care for their tamariki (children); whanau is much broader than the western parent and offspring concept. As a country, working out how what it means to be a Tiriti (Treaty) nation is also key; this directs us to look at what partnership, respect and mutual agency of iwi and Crown might mean.

4.1 | Limitations

The cohort analysis underestimates the risk as some parents with potentially harmful alcohol consumption levels were not documented, leading to their unintentional classification in the non-exposed group and a subsequent underestimation of the risk. Privacy restrictions in the IDI prevented linking non-biological caregivers to a household address, resulting in underestimation. There are issues around ethnicity data, including definitions of ethnicity and the ability to select more than one ethnic group, which may result in diverse groups and different strengths of identity being classified under seemingly homogenous 'main ethnic group' [49, 50]. Finally, the study could not account for cases of maltreatment that went unreported, resulting in underestimation.

The PAF was conducted as a sensitivity analysis because this calculation has an underlying assumption of causality [51, 52]. However, more work is needed to determine a causal relationship between alcohol and child maltreatment in the wider research literature.

Some potential confounding variables could not be considered due to a lack of measurements, such as isolation, lack of social support [53, 54], parental stress levels [55, 56] and household composition. Additionally, we did not include parental gender as a potential confounder as the vast majority of children had both a mother and a father at birth.

5 | CONCLUSION

Severe or hazardous alcohol use is a risk factor for substantiated child maltreatment among Māori. Many factors related to Māori alcohol consumption and harm are symptomatic of wider inequities related to the ongoing effects of colonisation, among other factors, as well as gaps in the regulation of alcohol sales. While supporting targeted interventions for whanau is important, exclusive focus in this area risks perpetuating the conditions reflected in statistics; therefore, a multi-level approach is appropriate.

AUTHOR CONTRIBUTIONS

Taisia Huckle: conceptualisation, funding acquisition, drafting of paper, editing. **Helen Moewaka Barnes:** conceptualisation, critical review and editing of paper. **Jose S. Romeo:** conceptualisation, data analysis, critical review and editing of paper.

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These results are not official statistics. They have been created for research purposes from the IDI, which is carefully managed by Stats NZ. For more information about the IDI please visit https://www.stats.govt.nz/integrated-data/. Open access publishing facilitated by Massey University, as part of the Wiley—Massey University agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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