Taku ahi tūtata taku mata kikoha, tahu ahi tawhiti taku mata kiporo.

When you are close to the fire, you have the ability to keep your blade sharp and ready for action.

This whakataukī is about fighting for a cause that is close to one's heart.

9. Burns

This chapter looks at tamariki injury from burns. These burns are due to either fire/flame or hot objects/substances.

Childhood burns are a considerable issue in Aotearoa, and they are largely preventable. Tamariki have thinner skin that burns faster, deeper, and at a lower temperature, than that of adults. Depending on the severity, childhood burns can cause death or be a debilitating condition with intense pain and long-term physical and psychological impacts that create more suffering for the tamariki and their whānau. [175]

The focus of this chapter is on hospitalisations for injury from burns. There were 5 burns-related tamariki fatalities during the years 2014 to 2018. All of these were related to 'fire/flame'. No further analysis of these fatalities has been presented in this chapter because of the low numbers.

In brief

Over time, there has been a decrease in the rate of tamariki hospitalisation for injury from burns, from 31.7 per 100,000 in 2012 to 22.6 per 100,000 in 2021.

In the years 2017 to 2021, 1,162 tamariki were hospitalised for injury from burns (a rate of 24.4 per 100,000).

The most common causes of tamariki hospitalisations for injury from burns during this time were:

- 'Contact with hot drinks, food, fats, and cooking oils' (37%)
- 'Contact with other hot fluids' (24%)
- 'Contact with hot household appliances' (10%)
- 'Fire/flame' (10%).

Tamariki aged 0 to 4 years made up the greatest proportion of hospitalisations for injury from burns, and within this age group, most hospitalisations were for children aged 1 to 4 years (85%, n=764).

Nearly two-fifths (38%) of tamariki aged 0 to 4 years who were hospitalised from for injury from burns were tamariki Māori (n=339). Pacific children aged 0 to 4 years had the highest hospitalisation rates within this age group (116 per 100,000).

Tamariki living in the most relatively deprived areas of Aotearoa had higher rates of hospitalisation for injury from burns than those living in the least relatively deprived areas, with those living in NZDep quintile 5 areas accounting for two-fifths of all tamariki hospitalisations for injury from burns (41%, n=469).

175. Safekids Aotearoa, 2020.

Trend over time

In the years 2017 to 2021, there were 1,162 tamariki hospitalised for injury from burns.

The rates of tamariki hospitalisation for injury from burns have decreased over time, from 31.7 per 100,000 in 2012 to 22.6 per 100,000 in 2021.

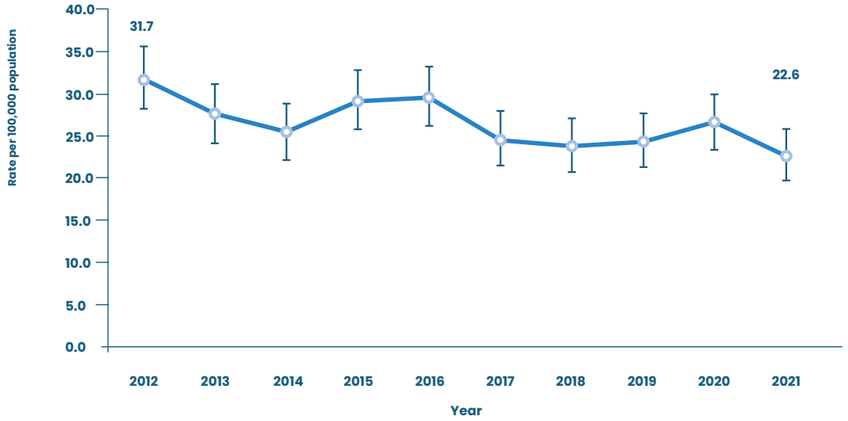
The most common causes of tamariki hospitalisations for injury from burns were:

- 'Contact with hot drinks, food, fats, and cooking oils' (37%)
- 'Contact with other hot fluids' (24%)
- 'Contact with hot household appliances' (10%)
- 'Fire/flame' (10%).

Figure 58 shows rates of tamariki hospitalisation for injury from burns for tamariki, for the years 2012 to 2021.

Additional data on tamariki hospitalisation for injury from burns for the years 2012 to 2021 are provided in Appendix 2. [176]

Figure 58: Rates of tamariki hospitalisations for injury from burns, 2012-2021



176. Table 58, Appendix 2.

Age Group

In the years 2017 to 2021, around 78% of all tamariki hospitalisations for injury from burns were for those aged 0 to 4 years (n=902), representing the highest rate of all the age groups (59.4 per 100,000).

For tamariki aged 5 to 9 years, the rate of hospitalisation for injury from burns was 10.1 per 100,000.

Tamariki aged 10 to 14 years had the lowest rate of hospitalisation for injury from burns out of all the age groups (5.8 per 100,000).

Tamariki aged 0 to 4 years had the highest rates of hospitalisation for injury from burns across all four of the top causes of burn injuries. This was especially pronounced for burn injuries from 'contact with hot drinks, food, fats, and cooking oils' (24.1 per 100,000, compared with 2.4 per 100,000 for those aged 5 to 9 years and 1.3 per 100,000 for those aged 10 to 14 years).

Looking in more detail at tamariki hospitalisations for injury from burns for the age group 0 to 4 years, most of them were for those aged more than 1 year (85%, n=764), compared with those aged less than 1 year (15%, n=138).

Table 25 shows tamariki hospitalisations for injury from burns, presented by age group, for the years 2017 to 2021.

Figure 59 shows the rates of tamariki hospitalisation for injury from burns, presented by age group and the top four causes, for the period 2017 to 2021.

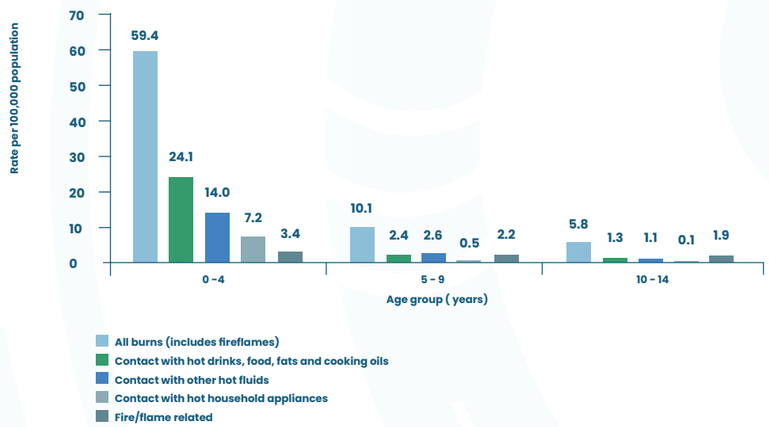
Additional data on tamariki hospitalisations for injury from burns are provided in Appendix 2. [177]

177. Table 59, Appendix 2.

Table 25: Tamariki hospitalisations for injury from burns, by age-group, 2017-2021

Age Group (Years)	No. of Hospitalisations	%	Rate per 100,000	95% CIs	
0 - 4	902	77.62	59.4	55.6	63.4
5 - 9	168	14.46	10.1	8.6	11.7
10 - 14	92	7.92	5.8	4.7	7.1
Total	**1,162**	**100**	**24.4**	**23.0**	**25.8**

Figure 59: Rates of tamariki hospitalisation for injury from burns, by age group, and top four causes, 2017–2021



Ethnicity

In the years 2017 to 2021, Māori comprised the highest proportion of tamariki hospitalised for injury from burns (36%, n=415). European/other children were the second-highest proportion (30%, n=349), followed by Pacific children (19%, n=223).

Pacific children had the highest rates of hospitalisation for injury from burns (48.0 per 100,000), followed closely by MELAA children (47.2 per 100,000). (101.1 per 100,000) and tamariki Māori (31.9 per 100,000). However, the rate for MELAA children must be interpreted with considerable caution due to the low numbers (n=38).

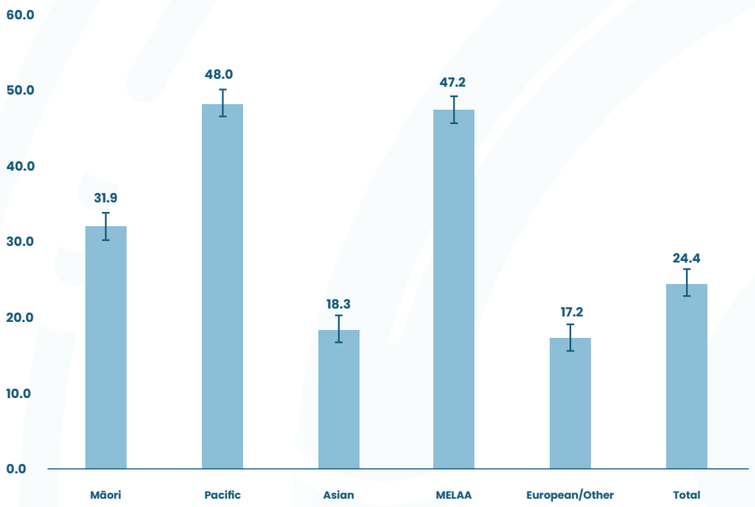
Looking specifically at the age group 0 to 4 years:

- For tamariki aged less than 1 year, tamariki Māori and Pacific children had the highest hospitalisation rates for injury from burns (64.8 per 100,000 for tamariki Māori; 64.2 per 100,000 for Pacific children).
- For tamariki between the ages of 1 and 4 years, Pacific children had the highest rate of hospitalisation for injury from burns (129.1 per 100,000), followed by tamariki Māori (84.6 per 100,000).

Figure 60 shows the rates of tamariki hospitalisation for injury from burns for 0-14 year olds, presented by prioritised ethnicity, for the years 2017 to 2021.

Figure 61 shows the rates of hospitalisations for injury from burns for tamariki aged less than one year old compared with those aged 1 to 4 years, by prioritised ethnicity, for the years 2017 to 2021.

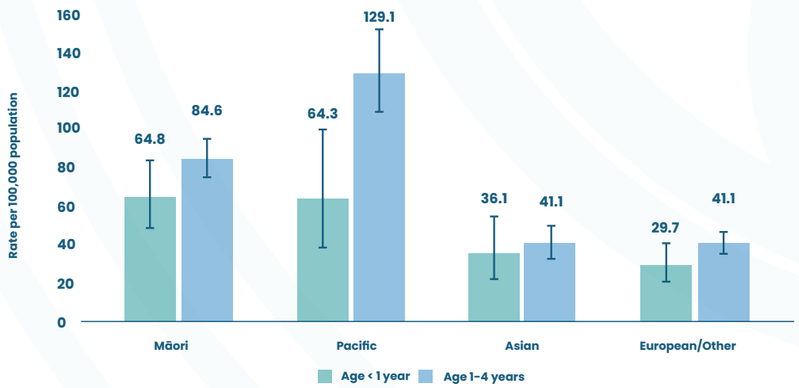
Figure 60: Rates of tamariki hospitalisation for injury from burns by prioritised ethnicity, 2017-2021



Additional points to note from Figure 60:

- The hospitalisation rate for Pacific children was significantly higher than that for tamariki Māori, Asian, and European/other children.

*Figure 61: Rates of hospitalisations for injury from burns for tamariki aged less than 1 year and 1–4 years by prioritised ethnicity, 2017–2021**



*** Table does not include data on the MELAA grouping due to the low numbers**

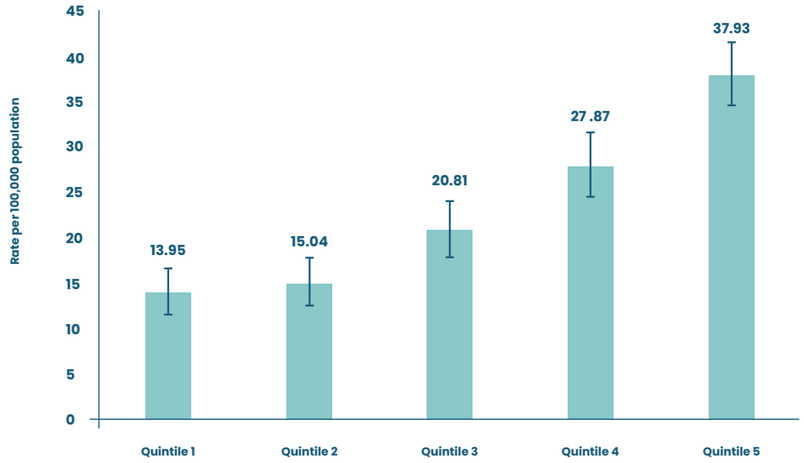
Socio-economic deprivation

In the years 2017 to 2021, tamariki living in more relatively deprived areas of Aotearoa were more likely to be hospitalised for injury from burns than those living in the least relatively deprived areas.

Tamariki living in the most relatively deprived areas of Aotearoa (NZDep quintile 5) had the highest rate of hospitalisation for injury from burns (37.9 per 100,000), accounting for two-fifths (41%, n=469) of them.

Figure 62 shows the rates of tamariki hospitalisation for injury from burns, presented by NZDep quintile, for the years 2017 to 2021.

*Figure 62: Rates of tamariki hospitalisation for injury from burns, by NZDep quintile, 2017–2021**



* Missing data =5

Gender

In the years 2017 to 2021, male tamariki made up a greater proportion of hospitalisations for injury from burns (around 58%, n=678) than female tamariki (around 42%, n=484).

Male tamariki also had significantly higher rates of hospitalisation (27.7 per 100,000) than female tamariki (20.9 per 100,000).

Table 26 shows tamariki hospitalisations for injury from burns, presented by gender, for the years 2017 to 2021.

Table 26:Tamariki hospitalisations for injury from burns, by gender, 2017–2021

	Number	%	Rate/100,000	95% CIs	
Females	484	41.7	20.9	19.0	22.8
Males	678	58.3	27.7	25.6	29.8
Total	**1,162**	**100**	**24.4**	**23.0**	**25.8**

Policy implications

The data in this chapter has shown that younger tamariki (those aged 0 to 4 years) are at higher risk of burn injuries leading to hospitalisation than older tamariki, and hospitalisations for injury from burns are more likely for tamariki Māori and Pacific children than for European/other children. Tamariki living in more relatively deprived areas are more likely to be hospitalised from burn-related injuries than those living in less relatively deprived areas. These patterns were also identified in our earlier publications on childhood burns. [178]

Social determinants of health

The social gradient associated with childhood burns injuries has been shown in other studies, both nationally [179] and internationally, [180] emphasising the need for a range of interventions that include those focused on addressing the social determinants of health. These interventions would include addressing household overcrowding, [181] improving the quality of rental housing, [182] and increasing levels of home ownership. [183]

Increased attention on measures to safeguard against tamariki burn injuries in the home

Previous investigations into childhood burns data in Aotearoa have shown that most burns injuries occur in the home (78%) and that the kitchen was the most common location for tamariki burn injuries (30%), [184] although we note that in many cases the scene of the burn injury is not confirmed, unknown, or not recorded. We recommend the following policy measures to make homes safer for tamariki:

- **Maintaining and monitoring the requirements for smoke alarms or detectors to be compulsory in all rental homes,** [185] as well as the requirements, when building or renovating, to have approved smoke alarms fitted in every escape route (hallway) and within three metres of every sleeping space door. This includes ensuring fire safety rules are appropriately enforced in transient, temporary, or emergency housing.

178. Additional data presented in our 2020 overview of childhood burns (Safekids, 2020) provides detail on the location and nature of burn injuries, by age and ethnicity, for the years 2009 to 2018. Although this data related to a different period than the material throughout this chapter, it has been helpful in confirming the patterns of burn injuries and therefore, in identifying these policy implications.
179. Mistry, R. M, et. al;. 2010.
180. Khoo, K. H., et. al., 2022.
181. Ibid
182. See for eg, Berry. et. al., 2017.
183. Peden. et. al., 2008.
184. Safekids Aotearoa 2020, p12.
185. The Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016 require that there is at least one working smoke alarm in within three metres of each sleeping space, including in sleep outs and self contained caravans, and there must be at least one smoke alarm on each level of multi-storey or multi-level homes.

176. Table 58, Appendix 2.

- **Extend the requirements for smoke alarms or detectors to include smoke alarms that are fitted with bed-shakers, strobe lights, pagers, or a combination of these, for people (both caregivers and tamariki) who are deaf or hard of hearing.** There is currently some support for adults to have this assistive hearing and alert equipment funded through Whaikaha, the Ministry for Disabled People, [186] but the Whaikaha support does not extend to tamariki. Members of Deaf Children New Zealand (Tamariki Turi o Aotearoa) can, however, access a grant towards a smoke alarm for tamariki the age of 16 years. [187]

- **Regulate for safe hot water temperatures.** [188] Serious burn injuries can occur for tamariki from hot tap water at 60°C. The Building Code [189] requires that hot water must be delivered at a temperature that "avoids the likelihood of scalding". [190] Non-mandatory guidance provided by the Ministry of Business, Innovation and Employment state that hot tap water should not exceed 45°C in settings such as schools, aged care, and health and disability facilities (including hospitals), and that it should not exceed 50°C in all other buildings. [191] Making this a mandatory requirement would provide more widespread protection from burn injury, especially if targeted to landlords as part of making homes healthy and safe for tenants. [192]

- **Further explore making furniture more fire-safe, such as under the FairTrading Act.** In 2019 the Ministry of Business, Innovation, and Employment commissioned a cost benefit analysis on introducing a product safety standard for fire retardant foam furniture. It found that the costs (especially to consumers) of such a standard would outweigh its benefits. [193] While that report showed some support for the current approach of a product safety policy statement (which is non-mandatory), this was in the context of the statement being a trial before further consideration of more stricter product safety regulation. In 2024 the policy statement will be five years old, and it would be worth revisiting the analysis especially considering the inequitable impacts of burns on tamariki Māori and Pacific children and those tamariki living in the most deprived areas of Aotearoa.

186. For more information on accessing deaf or hearing loss equipment for adults, see https://www.whaikaha.govt.nz/support-and-services/equipment-and-aids/deaf-or-hearing-loss-equipment-for-adults/ (accessed December 2023)
187. For more information on the Deaf Children New Zealand smoke alarm subsidy, see https://deafchildren.org.nz/get-funding/ (accessed December 2023)
188. Between 2009 and 2018, contact with hot tap water contributed to 11% of hospital admissions for children aged 0 to 14 years and particularly contributed to injury leading to hospital admission for Māori children aged 0 to 4 years (a rate of 14.4 per 100,000). Safekids (2020) Childhood Burns in Aotearoa: An Overview. Safekids, Aotearoa.
189. The Building Code, Clause G12 – Water supplies. Published in Schedule 1 of the Building Regulations 1992.
190. The Building Code, Clause G12.3.6
191. MBIE (2023) Acceptable Solutions G12/AS1 Water Supplies. Available online at: https://www.building.govt.nz/assets/Uploads/building-code-compliance/g-services-and-facilities/g12-water-supplies/asvm/g12-water-supplies-3rd-edition-amendment-13.pdf
192. Note that for licensing purposes, the Ministry of Education requires the temperature of tap water to not exceed 40°C in early childhood education and care centres. See Ministry of Education, 2022.
193. New Zealand Institute for Economic Research, 2019.

Enforcement of safety standards

All new and used children's nightwear should have a fire standard information label. This is regulated under the Product Safety Standard (Children's Nightwear and Limited Daywear Having Reduced Fire Hazard) Regulations 2016. Selling children's nightwear without the appropriate label is a breach of the Fair Trading Act 1986. Enforcement of this legislation falls with the Commerce Commission which proactively visits inspect retail stores with a focus on finding those that are selling non-compliant children's toys and nightwear. [194] The data presented in this chapter emphasise the importance of proactive enforcement of this standard.

Relevant education and support for whānau and caregivers

The data in this chapter illustrate the harms caused by burns from cooking, hot fluids, and household appliances. There is a continued need for support for whānau to keep their homes safe and the provision of useful home safety tips in effective, culturally safe ways, such as through Ririki Haumaru | Safekids Aotearoa wānanga, the provision of safety checklists (such as Whare Kahikā), other online resources (e.g., those provided by Fire Emergency New Zealand and the Australian and New Zealand Burn Association), and through practical advice around the use of fire guards and safety gates in and around the home. We would also recommend highlighting burn first aid messaging for whānau and caregivers as a secondary prevention measure as this may reduce the need for hospitalisation and need for surgery.

Further research and analysis

There are new and emerging burn risks for tamariki, especially around the home. For example, we are aware of the increasing incidence of injury from lithium-ion batteries (used, for example, in e-scooters and vaping devices). We recommend further research to understand these burn risks and how to best support whānau to address these risks. We also encourage the continued use of relevant databases, such as the Burns Registry of Australia and New Zealand, to inform policy and legislation.

194. Commerce Commission, 2022.