Morbidity from intentional self-harm among Pacific peoples in New Zealand 1996–2015

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ABSTRACT

AIM: The aim of this study was to describe trends in intentional self-harm for Pacific peoples in New Zealand by reviewing official data over the period 1996–2015.

METHOD: Publicly funded hospitalisations where the external cause was intentional self-harm were examined and areas of interest were identified and are presented.

RESULTS: Over a 19-year period (1996–2015), there were 1,608 intentional self-harm events for Pacific peoples (2.8%) out of 58,643 intentional self-harm events nationally for New Zealand's total population.

CONCLUSION: This study has been able to delineate Pacific ethnic-specific information not previously available for a prolonged period of 19 years. There are differences in Pacific peoples' experiences between ethnic groups. Furthermore, disparities persist between Pacific and non-Pacific. This study exposes priority areas for more targeted interventions according to ethnic, socioeconomic status, gender and age variations.

The link between intentional self-harm and suicide is complex and not fully understood.[1] However, it is well known that there is a significant and assiduous suicide risk for those who engage in intentional self-harm.[2–4] In fact, the suicide rate for this group is believed to escalate to between 50 and 100 times the rate of suicide in the general population.[4] Intentional self-harm for the purposes of this discussion is defined as any form of self-destructive behaviour where an individual purposefully hurts or mutilates their body regardless of their intentions to die.[5]

The main sources of statistical information are usually databases that collect self-inflicted injury hospital presentations developed more for administrative purposes rather than surveillance, thus missing the opportunity to measure intent.[6,7] Motives for intentional self-harm are multifaceted, for instance, hospitalisation data for intentional self-harm cannot be entirely a measure of suicide attempts.[8] Therefore there can be no clear distinction between incidents of suicide attempt and intentional self-harm without suicidal intent.[9] Ministry of Health data only report those events of intentional self-harm through hospital emergency departments (ED) that resulted in hospital admission to an inpatient ward or a mental health unit for more than two days or longer.[8] Evidently, it appears that intentional self-harm may be subject to underreporting.

The number of intentional self-harm hospitalisations for 2013 includes events where admitted patients were discharged under an ED domain after a short stay. District health boards (DHBs) started reporting these types of ED admissions from 1 July 2012 onwards. In order to provide comparable data with previous years, 2013 data presented in time trends and DHB aggregated data exclude short-stay ED hospitalisations.[8]

There were a total of 7,267 intentional self-harm hospitalisations in New Zealand in 2013, equating to a rate of 176.7 per 100,000

population.[8] The New Zealand European and Other ethnic group followed by Māori, showed the highest rates of intentional self-harm hospitalisations.[8] Furthermore, hospitalisation rates were greater in more deprived locations where the highest rate was for those residing in deprivation quintile 4 (226.3 per 100,000) as opposed to the lowest in quintile 1 (128.0 per 100,000).[8]

In 2013, there were 297 Pacific peoples hospitalised for intentional self-harm, which equates to an age-standardised rate of 100.9 per 100,000 Pacific population.[8] Additionally, the 2012 New Zealand Adolescent Youth Health Survey found that more than one in four Pacific students (27.3%) reported 'deliberate self-harm' in the previous 12 months, and 71% of Pacific students who attempted suicide (*n*=159) also experienced both suicide ideation and had previously intentionally self-harmed (*n*=114).[10]

More Pacific-focused research around intentional self-harm is needed to grow an evidence base to help inform future preventative initiatives and to cater to an increasing and evolving Pacific population in New Zealand.

There is currently no investigation of the statistical trends in Pacific intentional self-harm for all ages and outcomes over time. An analysis of Ministry of Health morbidity data for intentional self-harm will highlight specific areas for intervention, training, campaigning and further Pacific-centred research. This study is the first Pacific statistical analysis of trends in hospitalisation data for intentional self-harm for Pacific peoples and a companion paper to *Suicide mortality among Pacific peoples in New Zealand, 1996-2013.*[11]

Method

Design

Patterns among Pacific peoples of morbidity due to intentional self-harm over the period 1996 to 2015 were examined from a review of routinely collected public hospitalisation records.

Data collection

Morbidity data relating to Pacific peoples over a period of 19 years—from June 1996 to June 2015—were obtained from the New Zealand Ministry of Health's National Minimum Dataset, comprising publicly funded hospital discharges with any reported external cause code of intentional self-harm excluding sequelae (ICD-9-CMA-II E codes 950-958, ICD-10-AM codes X60-X84). Day-stay and inpatient events were included (short stay ED events were excluded), resulting in a total of 63,062 data records available for analysis.

Analysis

Descriptive tables of selected outcomes are presented, ie, intentional self-harm broken down by Pacific ethnicities: Samoan, Cook Islands, Tongan and Other, as well as Total Pacific and Total New Zealand (NZ).

Annual rates of intentional self-harm (per 100,000) for 1996, 2001, 2006 and 2013 were approximated by using our hospitalisation data (in year ending June 30) as the numerators, and the census usually resident population (in year ending December 31)—with total responses for ethnic group—as the denominator.[12,13] Note that these are the only years within our data range (1996 to 2015) for which Pacific ethnic breakdowns were available from Statistics New Zealand. In view of the small numbers of events, particularly when broken down by Pacific ethnicities, all further tables refer to events aggregated across the period 1996 to 2015. Additionally, we assessed patterns by age group and gender, deprivation quintile, event type, admission type, discharge type, primary diagnosis, length of stay, district health board area and health specialty. For each substantive variable, we show the numbers of admissions/discharges (and the percentages) in various categories. Note that tables exclude missing data from the calculation of percentages.

Results

Annual rates of intentional self-harm by ethnicity are shown for 1996, 2001, 2006 and 2013 (Table 1). Results should be interpreted with caution because of the small number of events by Pacific ethnic group. However, what is evident is that there appears to be an increasing rate for Cook Islands which then has the highest rate among the three Pacific ethnicities by 2013; and overall, Total Pacific has around 40–50% of the rate for Total NZ consistently across the years.

Table 1: Annual rates per 100,000 of intentional self-harm events by ethnicity: 1996, 2001, 2006 and 2013.

Year	Samoan		Cook Islands		Tongan		Other Pacific		Total Pacific		Total NZ	
	Events	Rate*	Events	Rate*	Events	Rate*	Events	Rate*	Events	Rate*	Events	Rate*
1996	37	36.4	12	26.0	3	9.6	19	82.6	71	35.1	3,116	86.1
2001	48	41.7	17	33.0	6	14.7	33	134.3	104	44.9	3,339	89.3
2006	35	26.7	19	33.4	14	27.7	20	72.7	88	33.1	3,212	79.7
2013	50	34.7	31	50.8	13	21.6	26	85.6	120	40.6	3,991	94.1

*The numerator is the number of self-harm events for the year ending June 30; the denominator is the census usually resident population—ethnic group total responses—for the year ending December 31.[12,13]

Table 2: Intentional self-harm events by ethnicity: patient characteristics (gender-age group, deprivation), June 1996–June 2015.[14]

	Samoan			Cook Islands			Tongan			Other Pacific			Total Pacific			Total NZ		
	M	F	All	M	F	All	M	F	All	M	F	All	M	F	All	M	F	All
Age group																		
<15	8	39	47 (6.7%)	2	12	14 (4.3%)	1	7	8 (5.1%)	1	7	8 (1.9%)	12	65	77 (4.8%)	367	1,737	2,104 (3.6%)
15–24	139	156	295 (42.0%)	56	59	115 (35.7%)	40	42	82 (51.9%)	70	105	175 (41.1%)	305	362	667 (41.5%)	5,488	11,744	17,232 (29.4%)
25–39	121	116	237 (33.8%)	58	79	137 (42.5%)	32	21	53 (33.5%)	69	81	150 (35.2%)	280	297	577 (35.9%)	7,408	12,046	19,454 (33.2%)
40+	63	60	123 (17.5%)	30	26	56 (17.4%)	9	6	15 (9.5%)	33	60	93 (21.8%)	135	152	287 (17.8%)	7,686	12,158	19,844 (33.8%)
Total	**331 (47.2%)**	**371 (52.3%)**	**702 (100%)***	**146 (45.3%)**	**176 (54.7%)**	**322 (100%)**	**82 (51.9%)**	**76 (48.1%)**	**158 (100%)**	**173 (40.6%)**	**253 (59.4%)**	**426 (100%)**	**732 (45.5%)**	**876 (54.5%)**	**1,608 (100%)**	**20,949 (35.7%)**	**37,685 (64.3%)**	**58,634 (100%)**
Missing**			57			20			20			30			127			4,428
Deprivation* **	**All**			**All**			**All**			**All**			**All**			**All**		
1 Least	35 (4.6%)			17 (5.1%)			14 (8.0%)			32 (7.1%)			98 (5.7%)			7,137 (11.4%)		
2	51 (6.7%)			26 (7.8%)			16 (9.1%)			43 (9.6%)			136 (7.9%)			9,226 (14.7%)		
3	104 (13.7%)			38 (11.4%)			28 (16.0%)			74 (16.4%)			244 (14.2%)			11,977 (19.1%)		
4	178 (23.5%)			81 (24.4%)			46 (26.3%)			119 (26.4%)			424 (24.7%)			17,267 (27.6%)		
5 Most	389 (51.4%)			170 (51.2%)			71 (40.6%)			182 (40.4%)			812 (47.4%)			16,952 (27.1%)		
Total	**757 (100%)**			**332 (100%)**			**175 (100%)**			**450 (100%)**			**1,714 (100%)**			**62,559 (100%)**		
Missing	2			10			3			6			21			503		

*Percentages may not sum to 100% due to rounding.
**Missing data have been excluded from calculation of percentages.
***NZDep is an area-based measure of deprivation.[14]

Ethnicity

There were 1,608 intentional self-harm events (2.8%) among Total Pacific out of 58,364 for Total NZ (Table 2). The largest Pacific ethnic group was Samoan at 702 or 43.7% of Total Pacific (1,608).

Gender

Intentional self-harm is more prevalent in females than males across all Pacific ethnic groups, except Tongan (48.1%) ranging up to 59.4% (Other Pacific) (Table 2). In Total Pacific, females comprised 54.5% compared to 64.3% in Total NZ, showing a similar pattern by gender.

Age group

Across Pacific ethnic groups, intentional self-harm events were more prevalent in the 15–24 age group followed by the 25–39 group, except for Cook Islands where the order was reversed (Table 2). Thus, in Total Pacific, the percentages in each age group in order of magnitude were: 15–24 (41.5%),

25–39 (35.9%), 40+ (17.8%), <15 (4.8%). These compared to Total NZ as follows: 40+ (33.8%), 25–39 (33.2%), 15–24 (29.4%), <15 (3.6%); here it can be seen that prevalence increases with age group, thus the highest percentage is in the 40+ age group.

Gender and age group

In Total Pacific, the largest group were females aged 15–24 (22.5% of all events) compared to females aged 40+ (20.7% of all events) in Total NZ (Table 2).

Deprivation

Prevalence increased with deprivation across all Pacific ethnic groups so that 47.4% were in the worst deprivation quintile for Total Pacific; this percentage was highest in Samoan (51.4%) (Table 2). Although prevalence also increased with deprivation in Total NZ, the distribution was much more even with a gradual rise to 27.6% (deprivation quintile 4) before dropping slightly to 27.1% in the worst deprivation quintile.

Admissions and discharge type

The majority of events were inpatient admissions in both Total Pacific (85.9%) and Total NZ (85.0%), increasing to as high as 87.0% in Samoan (Table 3). Overwhelmingly, events were acute admissions in both Total Pacific (95.7%) and Total NZ (95.0%), rising as high as 96.5% in Cook Islanders. Most discharges were Routine followed by Further Care, and Community Care: Total Pacific (77.5%, 12.7% and 6.6% respectively), Total NZ (74.9%, 16.7% and 4.8% respectively). A small percentage of events ended in death at discharge: 1.2% for Total Pacific and 1.0% for Total NZ, while among Pacific ethnic groups, the highest percentage was 3.4% in Tongan.

Table 3: Intentional self-harm events by ethnicity: admission and discharge characteristics, June 1996–June 2015.

	Samoan		**Cook Islands**		**Tongan**		**Other Pacific**		**Total Pacific**		**Total NZ**	
	n	**%**	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Event type												
Day stay	99	13.0	51	14.8	27	15.2	68	14.9	245	14.1	9,460	15.0
Inpatient admission*	660	87.0	291	85.1	151	84.8	388	85.1	1,490	85.9	53,602	85.0
Total	**759**	**100****	**342**	**100**	**178**	**100**	**456**	**100**	**1,735**	**100**	**63,062**	**100**
Admission type												
Arranged admission**	30	4.0	9	2.6	13	7.3	18	3.9	70	4.0	2,961	4.7
Acute admission***	728	96.0	330	96.5	165	92.7	437	95.8	1,660	95.7	59,926	95.0
Waiting list	1		3	0.9	-		1	0.2	5	0.3	154	0.2
Psychiatric readmission	-		-		-		-		-		21	0.0
Total	**759**	**100**	**342**	**100**	**178**	**100**	**456**	**100**	**1,735**	**100**	**63,062**	**100**
Discharge type												
Further care	88	11.6	39	11.4	22	12.4	71	15.6	220	12.7	10,525	16.7
Community care	46	6.1	18	5.3	20	11.2	30	6.6	114	6.6	3,015	4.8
Deceased	7	0.9	1	0.3	6	3.4	6	1.3	20	1.2	601	1.0
Self-discharge	17	2.2	10	2.9	3	1.7	7	1.5	37	2.1	1,677	2.7
Routine discharge	601	79.2	274	80.1	127	71.3	342	75.0	1,344	77.5	47,244	74.9
Total	**759**	**100**	**342**	**100**	**178**	**100**	**456**	**100**	**1,735**	**100**	**63,062**	**100**

*Occupying a hospital bed for at least one night.
**Planned.
***Unplanned.
****Percentages may not sum to 100% due to rounding.

Table 4: Intentional self-harm events by ethnicity: primary diagnosis and health specialty, June 1996–June 2015.

	Samoan		Cook Islands		Tongan		Other Pacific		Total Pacific		Total NZ	
	n	%	n	%	n	%	n	%	n	%	n	%
Primary diagnosis												
Injury/poisoning	597	78.6	280	81.9	140	78.7	380	83.3	1,397	80.5	49,308	78.2
Mental disorder	111	14.6	39	11.4	28	15.7	58	12.7	236	13.6	11,405	18.1
Other	51	6.7	23	6.7	10	5.6	18	3.9	102	5.9	2,379	3.8
Total	**759**	**100***	**342**	**100**	**178**	**100**	**456**	**100**	**1,735**	**100**	**63,062**	**100**
Health specialty												
Medicine	423	55.7	195	57.0	95	53.4	287	62.9	1,000	57.6	41,128	65.2
Surgery	169	22.3	73	21.3	35	19.7	78	17.1	355	20.5	5,884	9.3
Mental health	160	21.1	66	19.3	44	24.7	89	19.5	359	20.7	15,175	24.1
Other	7	0.9	8	2.3	4	2.2	2	0.4	21	1.2	875	1.4
Total	**759**	**100**	**342**	**100**	**178**	**100**	**456**	**100**	**1,735**	**100**	**63,062**	**100**

*Percentages may not sum to 100% due to rounding.

Primary diagnosis

Injury-poisoning and mental disorder were the largest primary diagnoses: Total Pacific (80.5% and 13.6% respectively) and Total NZ (78.2% and 18.1% respectively) (Table 3). Similarly, this pattern applied across all the Pacific ethnic groups.

Health specialty

While Medicine was the largest health specialty treating intentional self-harm events, Mental Health was the second largest: Total Pacific (57.6% and 20.7% respectively) and Total NZ (65.2% and 24.1% respectively) (Table 4). Again this pattern applied across all the Pacific ethnic groups.

Table 5: Intentional self-harm events by ethnicity, gender and age group: mean days of stay, June 1996–June 2015.

	Samoan		Cook Islands		Tongan		Other Pacific		Total Pacific		Total NZ	
Age group	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
<15	1.8	2.7	21.0	1.6	1.0	2.0	1.5	1.8	5.5	2.4	4.8	3.2
15–24	9.0	3.7	9.2	3.7	7.3	8.5	11.0	4.6	9.3	4.5	6.5	5.3
25–39	8.6	5.3	7.7	5.0	5.2	15.3	12.6	5.4	9.1	6.1	6.9	6.1
40+	5.2	6.7	16.0	6.1	6.8	15.3	7.6	5.9	8.2	6.7	8.6	6.9
Overall	**8.0**	**4.6**	**10.2**	**4.5**	**6.5**	**10.7**	**10.9**	**5.1**	**8.9**	**5.3**	**7.4**	**6.0**
N	660		291		151		388		1,490		53,602	
Missing*	99		51		27		68		245		9,460	

*Missing data have been excluded from calculations.

Length of stay

Males stayed in hospital longer than females for both Total Pacific (8.9 vs 5.3 days) and Total NZ (7.4 days vs 6.0 days) (Table 5). Among Pacific ethnic groups, this pattern was reversed for Tongan males 6.5 days vs female 10.7 days. Pacific males stayed longer than NZ males (8.9 vs 7.4 days), while Pacific females stayed shorter than New Zealand females (5.3 vs 6.0 days). Length of stay tended to increase with age group for both Total NZ and Total Pacific (less so), though across Pacific groups the pattern among males was inconsistent.

Table 6: Intentional self-harm events by ethnicity: DHB area, June 1996–June 2015.

	Samoan	**Cook Islands**	**Tongan**	**Other Pacific**	**Total Pacific**		**Total NZ**	
DHB	**n**	**n**	**n**	**n**	**n**	**%**	**n**	**%**
Northland	5	6	3	12	26	1.5	2,528	4.0
Waitemata	109	43	25	63	240	13.8	6,749	10.8
Auckland	158	54	41	75	328	18.9	3,954	6.3
Counties Manukau	188	86	44	76	394	22.7	3,536	5.6
Waikato	19	30	2	28	79	4.6	6,008	9.6
Lakes	3	2	-	17	22	1.3	1,631	2.6
Bay of Plenty	25	7	3	15	50	2.9	3,476	5.5
Tairawhiti	1	1	1	-	3	0.2	784	1.3
Hawke's Bay	11	6	-	1	18	1.0	1,628	2.6
Taranaki	5	1	1	4	11	0.6	1,898	3.0
Midcentral	6	4	1	11	22	1.3	2,736	4.4
Whanganui	7	-	1	1	9	0.5	858	1.4
Capital and Coast	99	38	32	65	234	13.5	5,058	8.1
Hutt	45	17	3	21	86	5.0	2,953	4.7
Wairarapa	8	2	-	4	14	0.8	1,067	1.7
Nelson- Marlborough	6	6	1	4	17	1.0	2,540	4.1
West Coast	2	2	-	-	4	0.2	822	1.3
Canterbury	36	17	8	36	97	5.6	8,168	13.0
South Canterbury	3	-	1	2	6	0.3	903	1.4
Southern	22	12	9	15	58	3.3	5,389	8.6
Total	**758**	**334**	**178**	**450**	**1,735**	**100***	**62,686**	**100**
Missing**	1	-	-	6	-		376	

*Percentages may not sum to 100% due to rounding.
**Missing data have been excluded from calculation of percentages.

DHB

Examination by district health board region demonstrates that most of the intentional self-harm events for Total Pacific occurred in Counties-Manukau (22.7%), Auckland (18.9%), Waitematā (13.8%) and Capital-Coast (13.5%) (Table 5). By comparison, most of these events for Total NZ occurred in Canterbury (13.0%), Waitematā (10.8%), Waikato (9.6%), Southern (8.6%), Capital-Coast (8.1%), Auckland (6.3%) and Counties-Manukau (5.6%).

Discussion

Annual rates of intentional self-harm by ethnicity across the years 1996, 2001 and 2013 show that Pacific ethnic-specific focused investigations should continue to be supported. The increasing rate for the Cook Islands population affirms this. It is important to take into account Pacific heterogeneity in analyses of this kind.

Overall, Pacific peoples experienced a proportionately low level of intentional self-harm hospitalisations. Our findings indicate that intentional self-harm among Pacific peoples in New Zealand is predominantly among youth, particularly young Pacific females, except for the Cook Islands population where intentional self-harm was more prevalent in the adult group 25–39 years. Generally, the higher prevalence rate among Pacific females is comparable to the rates of intentional self-harm and suicide attempts for all other non-Pacific investigations.[3,15–17]

Length of hospital stay for Pacific males was longer when compared to all Pacific females, except Tongan females, and for all New Zealand males. These results highlight the significance of gender analyses, as well as the disparities that exist between Pacific and non-Pacific males and longer hospital stays for Tongan females.

Evidently, low socioeconomic areas are still underserved. Findings reinforce the importance of deprivation as a risk factor, not only for Pacific peoples but for Total NZ.

In relation to admissions and discharges, results highlight that more focused ethnic-specific efforts are needed, in particular with the Cook Islands population who experience more acute admissions, and Tongans who demonstrate the highest percentage (although small) of events ending in death.

For all Pacific ethnic groups, injury-poisoning and mental disorder formed the largest proportion of primary diagnoses. On this premise, more targeted initiatives are needed in these areas as the association between intentional self-harm and mental health is unequivocally interlinked.

Limitations

A major strength of the study is the focus on the Pacific population in New Zealand over an extended period of 19 years. A limitation however is that for those reporting multiple ethnic affiliations, according to Statistics New Zealand's protocol, information is prioritised. For instance, Māori ethnicity takes precedence over Pacific.[18]

Another limitation is the use of the term 'Pacific peoples' which assumes homogeneity of this population group. While this study provided Pacific ethnic breakdowns for Samoan, Cook Islands and Tongan populations, there were restrictions for 'Other' Pacific groups because of small numbers. The category 'Other' poses a challenge for Pacific ethnic-specific intentional self-harm for the unspecified Pacific groups.

Gender identification is restricted to the binary male and female categorisation and excludes those who do not identify with these (eg, transgender, intersex, gender fluid, gender neutral, etc.).

Conclusion

This study has been able to delineate Pacific ethnic-specific information not previously available, for a prolonged period of 19 years. It appears that one cannot homogenise Pacific peoples' experiences as there are clear distinctions. There continues to be inequalities between Pacific and non-Pacific sub-populations. This study exposes priority areas for more targeted interventions according to ethnic, socioeconomic status, gender and age variations.

Competing interests:
Nil.
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