Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/burns

Burn injury as a result of interpersonal violence in the Northern Territory Top End

Lisa Murphy [a,b,*], David Read [b,c], Margaret Brennan [b,c], Linda Ward [d], Kathleen McDermott [c]

[a] Northern Territory Medical Program, Flinders University, Building 4a, Nightingale Road, Royal Darwin Hospital Campus, Tiwi, NT, 0810, Australia
[b] Royal Darwin Hospital, 105 Rocklands Drive, Tiwi, NT, 0810, Australia
[c] National Critical Care and Trauma Response Centre, Level 8 Royal Darwin Hospital, 105 Rocklands Drive, Tiwi, NT, 0810, Australia
[d] Menzies School of Health Research, P.O. Box 41096 Box 41096, Casuarina, NT, 0811, Australia

ARTICLE INFO

Article history:
Accepted 30 January 2019

Keywords:
Assault
Burn
Domestic violence
Family violence
Interpersonal violence
Northern Territory

ABSTRACT

Aim: To describe the demographics, circumstances, burn wound characteristics and current tertiary centre management of interpersonal violence (IPV) burn victims in the Northern Territory Top End. It is anticipated that such knowledge gained will be of benefit to key stakeholders across the spectrum of injury prevention and management in this region.
Methods: All adult admissions to the Royal Darwin Hospital (RDH) during 2010-2015 were identified through the Burns Registry of Australia and New Zealand. Demographic and burn characteristics were compared between those classified as IPV and non-IPV. Case note review provided supplementary data for the IPV subset.
Results: Fifty-three patients met IPV criteria, comprising 7.4% of admissions to the RDH Burn Service. IPV burn victims were 2.3 times more likely to be female than those with non-IPV burn (95% CI: 1.2–4.3), and 17 times more likely to be Indigenous (95% CI: 7.9–35). Approximately half (53%) of IPV burns were classified as family or domestic violence; scalding was the most common mechanism in this group. Ten patients (19%) had incomplete burn care through self-discharge, all identified as Indigenous. Twenty percent of patients had no documented inpatient psychosocial support.
Conclusions: Female and Indigenous persons are at increased risk of IPV burn. The challenges of providing care to the IPV burn population extend beyond burn wound closure.

Abbreviations: BFAT, burn first aid treatment; BRANZ, Burns Registry of Australia and New Zealand; IPV, interpersonal violence; NT, Northern Territory; RDH, Royal Darwin Hospital.

* *Corresponding author at*: PO Box 40428, Casuarina, NT, 0811, Australia.
E-mail address: lisa.murphy@nt.gov.au (L. Murphy).

https://doi.org/10.1016/j.burns.2019.01.013

1. Introduction

Burn injury as a result of interpersonal violence (IPV) accounts for between 1.1% and 10% of total burn unit admissions globally [1,2], with larger proportions observed within specific population subsets or when examining single burn modalities [3,4]. Over the last decade IPV has consistently remained as one of the leading mechanisms of moderate to critical injury requiring admission to the Royal Darwin Hospital (RDH), Northern Territory (NT), Australia and as a leading cause of death in the Top End of the NT [5,6].

Intimate partner violence, here in referred to as domestic violence, is becoming increasingly acknowledged as a problem in Australian society, with one in six females and one in sixteen males reporting having experienced violence inflicted by a domestic partner [7]. Indigenous Australians are even more at risk [8], which is of particular relevance to the NT as Indigenous persons, including those who identify as Aboriginal or Torres Strait Islander peoples, constitute just under one-third of the local population [9].

This study aims to describe the demographics, circumstances, burn wound characteristics and current tertiary centre management of IPV burn victims in the NT Top End. It is anticipated that such knowledge gained will be of benefit to key stakeholders across the spectrum of injury prevention and management in this region.

2. Patients and methods

2.1. Setting

The Royal Darwin Hospital is a 360-bed facility and the sole tertiary referral centre for the Top End of the NT, servicing a population of approximately 150,000 spread across 516,945 km^2 [5,10]. Indigenous Australians represent just under 30% of NT's residents, and almost half of the NT population lives remotely or very remotely [9,11].

The RDH Burn Service comprises a multidisciplinary team and is a contributor to the Burns Registry of Australia and New Zealand (BRANZ). Burns of up to 25% total body surface area are routinely managed by the service. Larger burns are typically transferred 2600 km interstate to the nearest specialist burn unit. Burn Service Clinical Nurse Consultants collate standardised data for all patients admitted with burn injury for entry into both BRANZ and the RDH Burn Service Registry, using a combination of prospective and retrospective data collection.

2.2. Participants

All adult patients with burn injury meeting BRANZ eligibility criteria [12] from 1st January 2010 to 31st December 2015 were included. Children, defined as age less than sixteen years were excluded. Participants were stratified into IPV and non-IPV cohorts based on the recorded BRANZ burn injury intent description. Included in the IPV cohort were those with injury intent listed as 'Suspected sexual assault', 'Suspected maltreatment by parent', 'Suspected maltreatment by spouse or partner' and 'Suspected other and unspecified assault'. The case notes of all admissions listed as 'Event of undetermined intent' and 'Not stated/inadequately described' were manually searched to ensure appropriate cohort allocation. Admissions placed in all other intent categories were deemed non-IPV [13].

2.3. Definitions

Descriptions concerning the topography of violence have been adapted from World Health Organisation definitions [14]:

- Interpersonal violence; all incidence of intentional harm inflicted by one or more persons upon another and includes family violence, domestic violence and community violence.
- Family violence; assault by a blood or adoptive relative outside of an intimate partner relationship.
- Domestic violence; assault by an intimate partner, irrespective of gender pairing or legal status of the relationship.
- Community violence; intentional harm occurring between persons not within a family or intimate/domestic partner relationship. Assailants may be classified as 'acquaintance' or 'stranger'.

Remoteness is defined by the Australian Standard Geographical Classification Remoteness Area 2006 boundaries. The most accessible NT region within this study catchment was metropolitan Darwin; classified as 'outer regional' [15].

Alcohol or drug involvement at the time of injury was ascertained from supporting history, examination and/or biochemical features documented in clinical records.

Burn first aid treatment (BFAT) was defined as 'attempted' if any effort towards cooling was made but only deemed 'adequate' if there was documentation of twenty minutes of cool running water applied to the burn wound within 3 h of injury [16].

2.4. Measures

The following variables were obtained from BRANZ for all included burn admissions (IPV and non-IPV cohorts): age, gender, burn mechanism and burn distribution. Ethnicity, defined by Indigenous status, was collected from RDH electronic information systems. Electronic and hand-written medical records of the IPV burn cohort were further analysed for the following variables:

- Burn depth, burn size as a percentage of total body surface area calculated using Lund and Browder reference charts, presence of concomitant injury.
- Geographical location in which the burn injury was sustained.
- Gender of the alleged assailant and relationship to victim.
- Alcohol/other drug use by the victim at time of injury.
- Attempt and adequacy of BFAT.
- Number of theatre episodes, type of surgery performed.
- Critical Care Unit admission, length of stay, outcome.
- Involvement of Social Worker or Aboriginal Liaison Officer during admission.

2.5. Statistical analysis

Data analysis was performed using Stata (V.14.2, Stata Corp, College Station, Tx, USA). Values of $p<0.05$ were considered statistically significant. Fisher's exact and Wilcoxon Rank Sum tests were used for bivariate analysis. Multivariate logistics regression was used to estimate odds ratios. Factors with a bivariate p value of <0.1 were included in the regression models.

2.6. Ethics

This study received Human Research Ethics Committee approval from the Northern Territory Department of Health and Menzies School of Health Research Committee (HREC 2015– 2479).

3. Results

3.1. Sample description

A total of 712 cases were identified. Fifty-three (7.4%) met criteria for inclusion within the IPV cohort, with the remaining 659 (93%) deemed non-IPV. Within the IPV group an almost equal gender distribution was found (47% male). A male predominance was noted in those who sustained their burn through non-IPV events (74% male). The median age for the IPV cohort was 35 years; range 16–43 years. IPV burn victims were 2.3 times more likely to be female than non-IPV burn victims (95% CI: 1.2–4.3) and 17 times more likely to be Indigenous persons than non-IPV burn victims (95% CI: 7.9–35; Table 2).

The majority (64%, n=33) of IPV burns occurred within outer regional areas of the NT, which includes urban Darwin. A further 7.7% (n=4) were within remote regions of the NT and 29% (n=15) occurred within very remote NT [15]. The remainder sustained their burn injury outside of the NT.

Sixteen (30%) of the IPV burns were described as domestic violence incidents, all victims of which identified as Indigenous. There was an almost equal gender split in cases identified as domestic violence; 44% (n=7) male, 56% (n=9) female. A further twelve (23%) of the IPV burns resulted from family violence. Twenty-five IPV burns were sustained as a result of community violence. In almost 60% of cases, victims of burn IPV were documented as having used alcohol or other drugs at the time of their injury (Table 3).

3.2. Burn Injury

Burn and associated injury characteristics are outlined in Table 1. In just under eighty-percent of the IPV cohort the burn was recorded as an isolated injury. The most frequent mechanism of burn IPV was found to be scalding and occurred in 55% (n=29), compared with just 15% (n=99) of the non-IPV cohort. The majority of patients who suffered scald through IPV were victims of domestic or family violence (86%, n=24). Scald burn involving the back of the torso was 9.3 times more likely to be as a result of IPV intent than non-IPV in bivariate analysis (95% CI: 3.4–25). However, when corrected for Indigenous status, scald burn to the back was not found to be significant associated with IPV (OR 3.2, 95% CI: 1.0–11; Table 4).

Table 1 – IPV burn injury characteristics.

Mechanism of injury	Scald	29 (55%)
	Flame ± accelerant	13 (25%)
	Fireworks	3 (5.7%)
	Contact	3 (5.7%)
	Friction	5 (9.4%)
Burn surface area, median (range)		4.5% (1–35%)
Maximum burn depth[a]	Superficial dermal	(4.7%)
	Mid dermal	(30%)
	Deep dermal	(47%)
	Full thickness	(19%)
Concomitant injuries	Fracture	(3.8%)
	Joint subluxation	(1.9%)
	Soft tissue injury	(11%)
	Soft tissue injury + fracture	(3.8%)
	None identified	(79%)

[a] Burn depth not recorded for 10 patients.

3.3. Workload

The fifty-three IPV burn patients were admitted for a total of 483 bed days; range 1–26 days, median 8 days per admission. Five patients required Critical Care Unit admission as a direct consequence of their burn injury.

Surgical intervention at RDH was performed for 81% (n=43) of IPV patients, resulting in a total of sixty-six operating theatre visits; range 1–5 theatre episodes per patient. A single theatre episode was required by 61% (n=26), while a further 35% (n=15) required two theatre episodes. The remaining patients required in excess of two theatre episodes. A total of thirty-six wound excisions and fourteen split-thickness skin grafts were performed.

3.4. BFAT and psychosocial support

No attempt at BFAT was recorded in 70% of IPV victims. None of the sixteen victims of suspected domestic violence received adequate BFAT. Eighteen patients (34%) arrived at RDH within three hours of sustaining their injury, three of which received adequate BFAT and a further four received attempted BFAT prior to presentation.

The majority (79%) of the IPV group had documentation of consultation from Social Work or Aboriginal Liaison Officer departments. Of the eleven patients who did not have evidence of Social Work or Aboriginal Liaison Officer involvement, one-third took their own leave from hospital or were transferred interstate. A total of ten patients (19%) took leave against medical advice prior to completion of treatment. All patients who took their own leave identified as Indigenous.

4. Discussion

4.1. Background

This study is the first to describe burn injury sustained through IPV in the NT Top End. Over eighty-percent of such burns occurred in Indigenous persons, despite representing only 30% of the population [9]. Contrary to the male preponderance for

Table 2 – Logistic regression of demographic features by IPV and non-IPV.

	Intent		Bivariate	Multivariate			
	IPV	Non-IPV	*p*	*p*	Odds ratio (95% CI)	Standard error	Test statistic
n	53 (7.4%)	659 (93%)	–	–	–	–	
Male	25 (47%)	488 (74%)	<0.001	0.008	2.3 (1.2–4.3)	0.7	2.7
Female	28 (53%)	171 (26%)					
Indigenous	44 (83%)	141 (21%)	<0.001	<0.001	17 (7.9–35)	6.4	7.4
Non-Indigenous	9 (17%)	518 (79%)					
Median age (range; IQR)	35 (16–62; 22–43)	36 (16–89; 24–48)	0.1521	0.066	1.0 (1.0–1.0)	0.0	−1.8
Constant				<0.001	0.0 (0.0–0.1)	0.0	−6.8

Table 3 – Characteristics of IPV by alleged perpetrator.

	Domestic violence	Family violence	Community violence	Total
n	16 (30%)	12 (23%)	25 (47%)	53 (100%)
Male	7 (44%)	5 (42%)	13 (52%)	25 (47%)
Indigenous	16 (100%)	11 (92%)	17 (68%)	44 (83%)
Alcohol/drug use	8 (50%)	6 (50%)	16 (64%)	30 (57%)
Attempted BFAT	5 (31%)	7 (58%)	4 (16%)	16 (30%)
Adequate BFAT	0 (0.0%)	2 (17%)	1 (4.0%)	3 (5.7%)
Social Work or Aboriginal Liaison Officer input	12 (75%)	10 (83%)	20 (80%)	42 (79%)
Take own leave	2 (13%)	2 (17%)	6 (24%)	10 (19%)

Table 4 – Logistic regression of ethnicity and intent for scald injury by back involvement.

		n	Back involvement	Bivariate	Multivariate		
			n (%)	*p*	*p*	Odds ratio (95% CI)	Standard error
Ethnicity	Non-Indigenous	78	4 (5.1%)	<0.001	0.013	5.8 (1.5–23)	4.1
	Indigenous	50	19 (38%)				
Intent	IPV	99	9 (9.1%)	<0.001	0.058	3.2 (0.96–11)	2.0
	Non-IPV	29	14 (48%)				
Constant					0.0	0.1 (0.0–0.1)	0.0

non-IPV burn injuries treated by RDH, the gender distribution was almost equal across domestic, family and community violence subsets of IPV burns in the current series.

IPV attributed burns constituted 7.4% of burn admissions in this period, falling in the upper half of that described by Peck [2] and far higher than the rate of 1.1% described in a Western Australian study by O'Halloran et al. [1]. The current study and Western Australian study demonstrate a similar gender distribution, and an over representation of Indigenous persons. It is noted that the Western Australian study was from a higher-level Burn Centre, which is likely to explain the larger median burn size as a proportion of total body surface area (7% Western Australia versus 4.5% NT) and higher proportion of Critical Care Unit admissions (36% Western Australia versus 13% NT).

In this series, one-fifth of victims had associated soft tissue or bony injuries, as similarly described elsewhere [17]. Less than 6% of burn IPV victims in this study were documented as having received adequate BFAT, further contributing to preventable morbidity. This is markedly less than the 41% adequacy reported in a NT cohort by Read et al. [18].

Globally a number of variations in the characteristics of IPV related burns have been documented, with scald and flame dominating reports from Europe and North America, and chemical attacks more common in Asia and Africa [2]. However, a conserved theme is that such burns are more frequent in socioeconomically disadvantaged groups; the unemployed, ethnic minorities and migrants [19–21]. A complex combination of factors including those of geographic, cultural and historic nature continue to create significant barriers to the access of healthcare and prosperity for Indigenous persons in the NT [22]. Subsequently Indigenous Australians face a life expectancy 20 years less than that of their non-Indigenous counterparts [23]. This disadvantage is reflected in the over-representation of Indigenous persons as victims of burn through IPV in our series. However, an in-depth discussion of the factors influencing healthcare access falls outside the scope of this paper.

Duminy & Hudson [3] demonstrated an association between upper body scald in the adult and IPV. A significant association between scald to the back and IPV was not established in this study, which may be contributed to by the small sample size. However, given the frequency of back involvement in IPV scald within this series it is the authors' opinion that scald injury to the back should continue to raise some suspicion of IPV aetiology. In doing so, appropriate

psychosocial supports be instituted early as a component of harm minimisation strategies.

4.2. *Psychological and social support*

Burn injury due to IPV is a psychological injury as well as a physical one. Such injuries have been linked to higher levels of psychological distress than for equivalent burns sustained through other events [19]. This is particularly so in situations where long term scarring is evident in cosmetically important areas and is exemplified by assault with chemicals, where the aim is often permanent disfigurement of the head and neck [24]. The Burn Service at RDH aims to offer counselling to all victims of burn IPV, either through the Social Work team, Aboriginal Liaison Officer service or as where culturally appropriate. In this series just under 80% of those who sustained burn through IPV had documentation of psychosocial support during their admission.

Ten persons, all of whom identified as Indigenous, took their own leave prior to the completion of care. The provision of psychosocial support post injury is incredibly complex, as are the factors contributing to why patients take their own leave and are beyond the scope of this paper to discuss in the deserved detail. However, it is paramount that when addressing these needs health care providers ensure cultural sensitivity [25].

4.3. *Domestic and Family Violence in the NT*

Over half of this series suffered burns as a result of domestic or family violence. Further it is noted that this figure may be under reported as victims may be hesitant to reveal the true nature of such incidents for fear of retribution [26,27]. All domestic violence admissions and the majority of family violence admissions (92%, n=11) were Indigenous. Within these females were only slightly over represented, indicating that males are also at risk of falling victim to domestic and family violence burn injury.

Domestic violence in the NT has been described as a 'contagion' and 'out of control' [28]. This observation persists despite the 2009 introduction of mandatory reporting of all known and suspected domestic and family violence incidents in the NT [29]. This occurred following recommendations by the Coroner consequent to an investigation into the death of an Indigenous woman after an eleven-year history of domestic violence [30].

Subsequently the NT government has released a framework outlining an integrated response towards the reduction of IPV within families and domestic relationships. This aims to centralise reporting and coordinate the response amongst government, non-government and community stakeholders [31]. Evaluation of the effectiveness of these initiatives is ongoing, however the increased availability of resources and coordination of responses is welcome, particularly those which better facilitate timely access to safer accommodation options after discharge of the IPV burn victim from hospital.

Half of this series had documentation of alcohol or drug use by the IPV burn victim at the time of injury. Alcohol has been well described as a factor in IPV, and it is known that the NT has the highest per capita alcohol consumption in Australia [18,32]. It is not the authors' intent to infer that the victims of burn IPV are complicit in their injury, but rather to emphasise that any strategies aimed towards reducing IPV will also need to consider alcohol and other substance misuse. Furthermore, victims of IPV burn should be screened for risky alcohol and drug usage, and where suspected interventions should be offered.

5. Study limitations

Allocation of injury intent within BRANZ is determined by the RDH Burn Service Clinical Nurse Consultants based on the patient's description of events and where present, collateral history obtained from police and emergency services who attended the incident scene. In the absence of an objective, external description, correct intent allocation requires patients to disclose a true account of events. This may be hindered by lack of trust in the health team, fear of repercussions for themselves and others, or poor event recollection; additionally accounts of the event may evolve across the course of an admission [33].

Other data points are influenced by the accuracy and completeness of documentation during the admission, with deficiencies inherent to the retrospective study design and impacted on by the training and assessment skills of individual staff. For this reason, 'none documented' should not be assumed as globally equivalent to 'absence of'.

Although RDH is the only tertiary centre in the Top End, the region is further serviced by two smaller hospitals and a number of regional clinics. Not all burn injuries will be referred to RDH and fewer still will be admitted as an inpatient. Results of this study should be interpreted with caution as the decision to admit for inpatient management may be shaped by social and geographical influences not applicable to other facilities and jurisdictions. As all data is obtained from a single site which is in many ways unique from other major Australian cities, the findings of this study cannot be extrapolated to other Australian or international populations with confidence.

6. Conclusions

Burn injuries as a result of IPV constitute just over seven-percent of adult burns admission to the RDH Burn Service and are approximately evenly divided between domestic and family violence, and community violence interactions. Indigenous persons and females are over represented but burn IPV is by no means a form of injury from which males are excluded.

In this series scald was the most common mechanism of IPV burn injury, and in one-fifth another soft tissue or bony injury was evident. Scalds on the back should continue to raise suspicion of IPV.

Although the RDH Burn Service offered psychosocial support to most victims of IPV, the high rate of incomplete treatment manifested as taking one's own leave implies that further culturally appropriate efforts may be required.

The response to IPV related burn injury will require a whole-of-society approach, addressing attitudinal and alcohol policy, and practical strategies to ensure the ongoing safety of

victims. Burn clinicians should remain cognisant that the complexity of managing such patients goes beyond simply achieving timely burn wound closure.

Conflicts of interest

All authors declare there are no conflicts of interest.

Funding

This research did not receive any specific funding from agencies within the public, commercial, or not-for-profit sectors.

Acknowledgements

We wish to acknowledge the contribution of the RDH Burn Service Clinical Nurse Consultants in data collection and consolidation within BRANZ and the RDH Burn Service Registry.

REFERENCES

[1] O'Halloran E, Duke J, Rea S, Wood F. In the media: burns as a method of assault. Burns 2013;39(6):1311–5.
[2] Peck MD. Epidemiology of burns throughout the World. Part II: intentional burns in adults. Burns 2012;38(5):630–7.
[3] Duminy FY, Hudson DA. Assault inflicted by hot water. Burns 1993;19(5):426–8.
[4] Kramer C, Gibran N, Heimbach D, Rivara F, Klein M. Assault and substance abuse characterize burn injuries in homeless patients. J Burn Care Res 2008;29(3):1–3.
[5] Gowling C, McDermott K, Ward L, Martin B. Ten years of trauma in the top end of the Northern Territory, Australia : a retrospective analysis. Int Emerg Nurs 2015;23:17–21.
[6] McDermott K, Brearley M, Hudson S, Ward L, Read D. Characteristics of trauma mortality in the Northern Territory, Australia. Inj Epidemiol 2017;4(14):1–10.
[7] Australian Bureau of Statistics. Personal safety, Australia, 2016. Australian Bureau of Statistics; 2017 (Viewed 3 June 2018), http://www.abs.gov.au/ausstats/abs@.nsf/mf/4906.0.
[8] Berry J, Harrison J, Ryan P. Hospital admissions of Indigenous and non-Indigenous Australians due to interpersonal violence, July 1999 to June 2004. Aust N Z J Public Health 2009;33(3):215–22.
[9] Australian Bureau of Statistics. Estimates of Aboriginal and Torres Strait Islander Australians, June 2011. Australian Bureau of Statistics; 2013 (Viewed 23 November 2017), http://www.abs.gov.au/ausstats/abs@.nsf/mf/3238.0.55.001.
[10] Curry B, Ward L, Cheng A. The epidemiology and clinical spectrum of melioidosis: 540 cases from the 20year Darwin prospective study. PLoS Negl Trop Dis 2010;4(11):1–11.
[11] Australian Bureau of Statistics. Australian social trends, 2008. Australian Bureau of Statistics; 2008 (Viewed 3 June 2018), http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter3002008.
[12] BRANZ. Inclusion/exclusion criteria. Monash University; 2017 (Viewed 12 March 2017), https://www.branz.org/node/28.
[13] BRANZ. BRANZ and extended data set website (release 2.8). 2013 Monash University (Viewed 12 March 2017), https://bi-nbr.registry.org.au/Application/home.aspx.
[14] Violence Prevention Alliance. Definition and typology of violence. World Health Organisation; 2018 (Viewed 03 June 2018), http://www.who.int/violenceprevention/approach/definition/en/.
[15] Doctor Connect ASGC remoteness areas. Australian Government Department of Health. 2006 (Viewed 12 March 2017), http://www.doctorconnect.gov.au/internet/otd/Publishing.nsf/Content/locator.
[16] ANZBA First aid, Australian & New Zealand Burn Association, (viewed 12 March 2017), http://anzba.org.au/care/first-aid/.
[17] Purdue GF, Hunt JL. Adult assault as a mechanism of burn injury. Arch Surg 1990;125(2):286–9.
[18] Read D, Tan S, Ward L, McDermott K. Burn first aid treatment in remote Northern Australia. Burns 2017;44(2):481–7.
[19] Kaufman MS, Graham CC, Lezotte D, Fauerbach JA, Gabriel V, Engrav LH, et al. Burns as a results of assault: associated risk factors, injury characteristics, and outcomes. J Burn Care Res 2007;28(1):21–8.
[20] Stone MJ. Assault by burning and its relationship to social circumstances. Burns Incl Therm Inj 1998;14(6):461–7.
[21] Theodorou P, Spanholtz TA, Amini P, Maurer CA, Phan TQ, Perbix W, et al. Cologne burn experience with assault burn injuries. Burns 2009;35(8):152–7.
[22] Australian Bureau of Statistics. Aboriginal and Torres Strait Islander Population, 2016. Australian Bureau of Statistics; 2018 (Viewed 4 June 2018), http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2071.02016Main%20FeaturesAboriginal%20and%20Torres%20Strait%20islander%20Population%20Article12.
[23] Zhao Y, Dempsey K. Causes of inequality in life expectancy between Indigenous and non-Indigenous people in the Northern Territory 1981-2000: a decomposition analysis. Med J Aust 2006;184(10):490–4.
[24] Ho WS, Ying SY, Chan HH, Chow CM. Assault by burning– a reappraisal. Burns 2001;27(5):471–3.
[25] Plani F, Carson P. The challenges of developing a trauma system for Indigenous people. Injury 2008;39(5):43–53.
[26] Godwin Y, Hudson DA. The burnt male– intentional assault on the male by his partner. S Afr J Surg 1998;36(4):140–2.
[27] Gravante G, Esposito G, Delogu D, Montone A. Intentional burn injuries. Burns 2006;32(4):526–7.
[28] Cavanagh G. Inquest into the deaths of Wendy Murphy and Natalie McCormack [2016] NTLC 024. Alice Springs Coroners Court; 2016.
[29] Department of the Attorney-General and Justice. Domestic and family violence act as in force at 12 April 2017. Northern Territory: Northern Territory Government; 2017.
[30] Cavanagh G. Inquest into the death of Jodie Palipunaminni [2006] NTMC 083. Darwin [84_TD$DIFF][56_TD$DIFF]Coroners Court; 2006.
[31] Northern Territory Government. The Northern Territory's domestic, family & sexual violence reduction framework 2018-2028. 2018.
[32] Skov S, Chikritzh T, Li S, Pircher S, Whetton S. How much is too much? Alcohol consumption and related harm in the Northern Territory. Med J Aust 2010;193(5):269–72.
[33] Natarajan M. Differences between intentional and non-intentional burns in India: implications for prevention. Burns 2014;40(5):1033–9.