

Work-related Burn Injuries Among Burn Patients in a Tertiary Care Burn Facility, 2013 - 2018

University of North Carolina at Chapel Hill, North Carolina Jaycee Burn Center



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Constantly 18% of cases treated in UNC Jaycee Burn Center are work-related burns. They are characterized by ten fold increase in proportion of electrical burns and very high ratio of chemical injuries. Electrocutions are responsible for 66% of deaths in the work-related burns group. Increased emphasis on local work safety regulations is necessary to reduce work-related burns' mortality.

Nationwide burn prevention initiatives, government laws, and local safety policies focus mainly on preventing fire and scald injuries. More attention to work-related electrical and chemical burns is necessary.

Objective:

The features of work-related burn injuries are not well described in the literature. We wanted to describe these characteristics among our patients to evaluate the potential impact of commonly accepted prevention efforts.

Study group:

Adults of working age admitted to UNC Jaycee Burn Center between January 1st, 2013 and December 31st, 2018.

Results:

	Total 3545	NWRB 2904 (81.9%)	WRB 641 (18.1%)	P-value
Demographic characteristics				
Age group, n (%)				
20 – 29 years old	1007 (28.4%)	793 (27.3%)	214 (33.4%)	.009
50 – 59 years old	813 (22.9%)	714 (24.5%)	99 (15.4%)	<.001
Gender, n (%)				
Male	2512 (70.9%)	1974 (68.0%)	538 (83.9%)	<.001
Comorbidities, n (%)				
Current smoker	1375 (38.8%)	1154 (39.7%)	221 (34.5%)	.049
Hypertension	678 (19.1%)	602 (20.7%)	76 (11.8%)	<.001
Diabetes mellitus	299 (8.4%)	270 (9.3%)	29 (4.5%)	<.001
Cardiovascular	64 (1.8%)	61 (2.1%)	3 (0.5%)	.066
Burn characteristics				
TBSA, mean % [range %]		4.74 [0 – 97%]	3.28 [0 – 90.5%]	<.001
Inhalation injury	110 (3.1%)	103 (3.5%)	7 (1.1%)	.001
Burn etiology				
Chemical/Corrosion	161 (4.5%)	68 (2.3%)	93 (14.5%)	<.001
Contact	286 (8.1%)	231 (8%)	55 (8.6%)	.645
Electrical	112 (3.2%)	36 (1.2%)	76 (11.9%)	<.001
Flame	1548 (43.7%)	1371 (47.2%)	177 (27.6%)	<.001
Friction	43 (1.2%)	40 (1.4%)	3 (0.5%)	.078
Scald	1344 (37.9%)	1122(38.6%)	222 (35.4%)	.137
Other	46 (1.3%)	36 (1.2%)	10 (1.6%)	.436
Treatment characteristics				
Total days in ICU, mean [range]	2.66 [0-464]	2.93 [0 – 464]	1.4 [0 – 203]	.029
Total days on ventilation, mean [range]	2.1 [0-302]	2.3 [0 – 302]	0.8 [0 – 183]	.020
LOS, mean in days [range]	9.5 [1-612]	9.9 [1 – 612]	7.4 [1 – 264]	.006
Mortality, n (%)	35 (1.0%)	32 (1.1%)	3 (0.47%)	.262
Hospitalization cost, mean	\$73,197	\$78,193	\$50,544	<.001

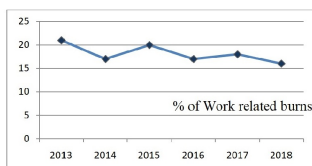


Fig 1. Percentage of work-related burn cases

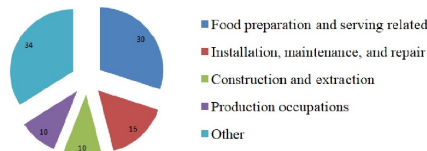


Fig 5. Occupation types in work-related burn group

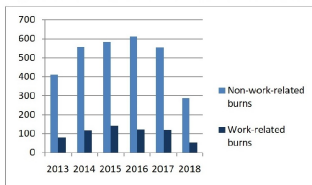


Fig 2. Number of work-related and non work-related burns

WRB:	NWRB:
1. Scald (35.4%)	1. Flame (47.2%)
2. Flame (27.5%)	2. Scald (38.6%)
3. Chemical (14.5%)	3. Contact (8%)
4. Electrical (11.9%)	4. Chemical (2.3%)

Fig 3. Four most common etiologies in work-related and non work-related groups.

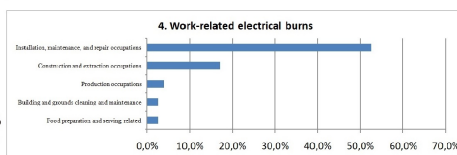
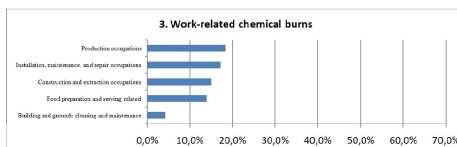
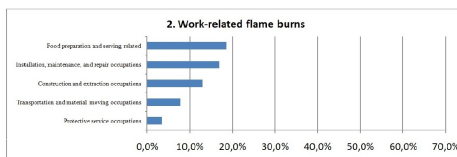
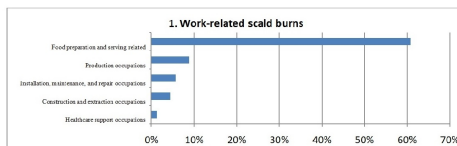


Fig 6. Proportion of occupation groups in four most common work-related burn etiologies.

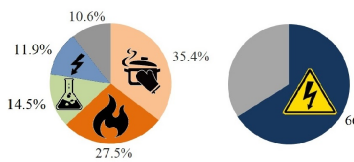


Fig 4. Proportion of work-related burn etiologies and cause of death.

Lessons learned:

1. Proportion of work-related burns remain stable in the community.
2. Ratios of electrical and chemical injuries are dramatically increased in the work-related group.
3. Currently available burn prevention programs are focused on fire and scald burns
4. Increased emphasis on work-related electrical and chemical burns' prevention is necessary to reduce mortality in the work-related burns

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