

Cluster investigation

Tendon entrapment syndrome in “arc-air” users.

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The two tiered approach

1. The worksite assessment, “practical” component.

- Establish the context
- Worksite visit- Hazard, and risk identification. Risk analysis.
- Risk management – Evaluation, intervention, audit and re-evaluation.

2. Research component. The theoretical component.

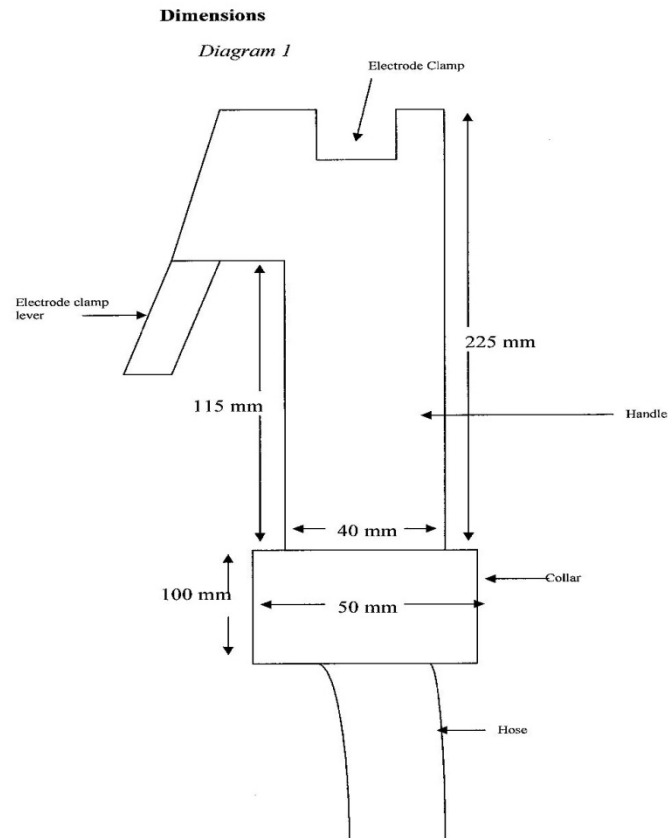
Was there an association? What was the strength of the association ? Could anything further be learned?

Null hypothesis

“There is no association between the development of TES and the use of the arc-air gun”.

ARC Air welding torch

Bradken Resources
WPS Ref: CM:2391



Literature review

- Over 300 articles were reviewed.
- Key words were used to find the articles .These consisted of all the synonyms used for this diagnosis.
- Medline , Pubmed, Pubmed- Indexed for Medline, Ovid, Cochrane library, CINAHL and Google Scholar.

Prevalence

- In general population 2.2% (Kasdan ML₂₀₂ ; Ranney D₁₃₃ ; Hueston JT₁₄₈)
- 40 yrs plus (peak 55-60 y/o) female; 2-6 x greater.
- Thumb, middle ring, index, fifth.

Causation

- Systemic causes CVD, RA, DM, Arthritis, Amyloidosis, Endocrine, Sarcoidosis, pigmented villonodular synovitis, gout, Histoplasmosis, Calcific tendonosis (often mistaken).
- Septic and infective (Kochs)
- Idiopathic
- Other e.g. Collateral ligaments, partial laceration of tendon, nodule, loose body.
- *Tensile Physical load*

Tensile Load

- 3 N at Finger tip (FT) 11-13N at A1 pulley proximal end and 28 distal end.
- 3N FT 107N at A1 (@ 70°) ; 12N - 428N Hume,
- Azar 50mm Hg-500/700mm Hg

The Study

- Case Control
- Ethics
- Need for Questionnaire
- Data analysed using SPSS Graduate pack 16.0

Data analysis

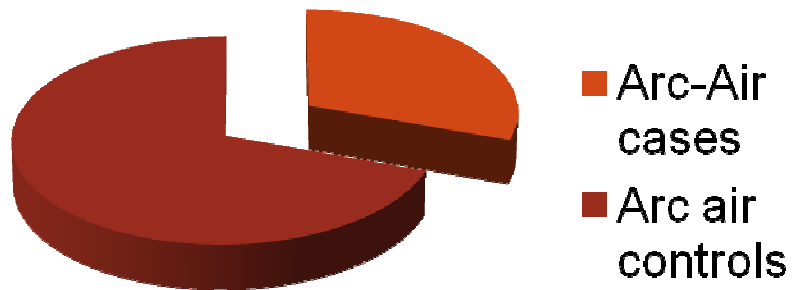
- SPSS Graduate Pack 16.0 for Windows.
- All responses were converted to nominal data e.g. “Yes” became 1; “No” =2; fully explained in data analysis.
- This made it easier for the statistics for the graphs

Results

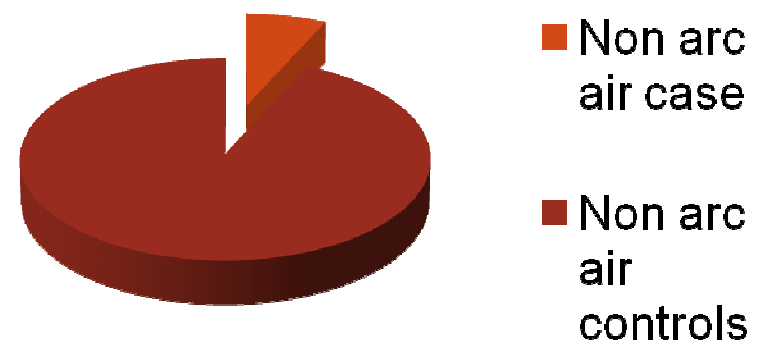
- 332 (560 originally).
- Same number in arc 46.
- 105 questionnaires were returned, 32% of workforce
- 46 (14%) were from arc air; 59 (18%) from other manual jobs.

Cases and Controls by Area

Arc air



Non Arc air

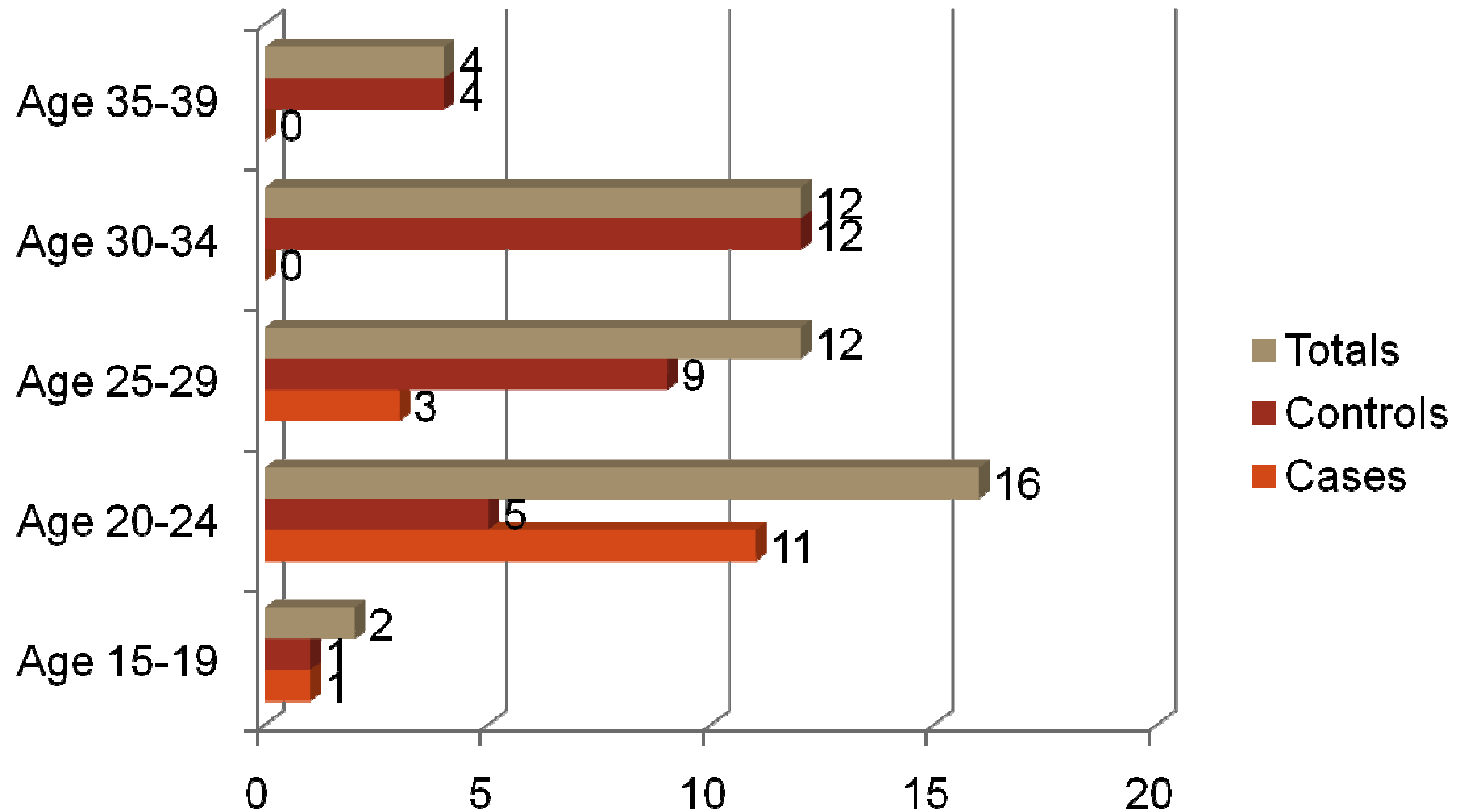


Odds Ratio

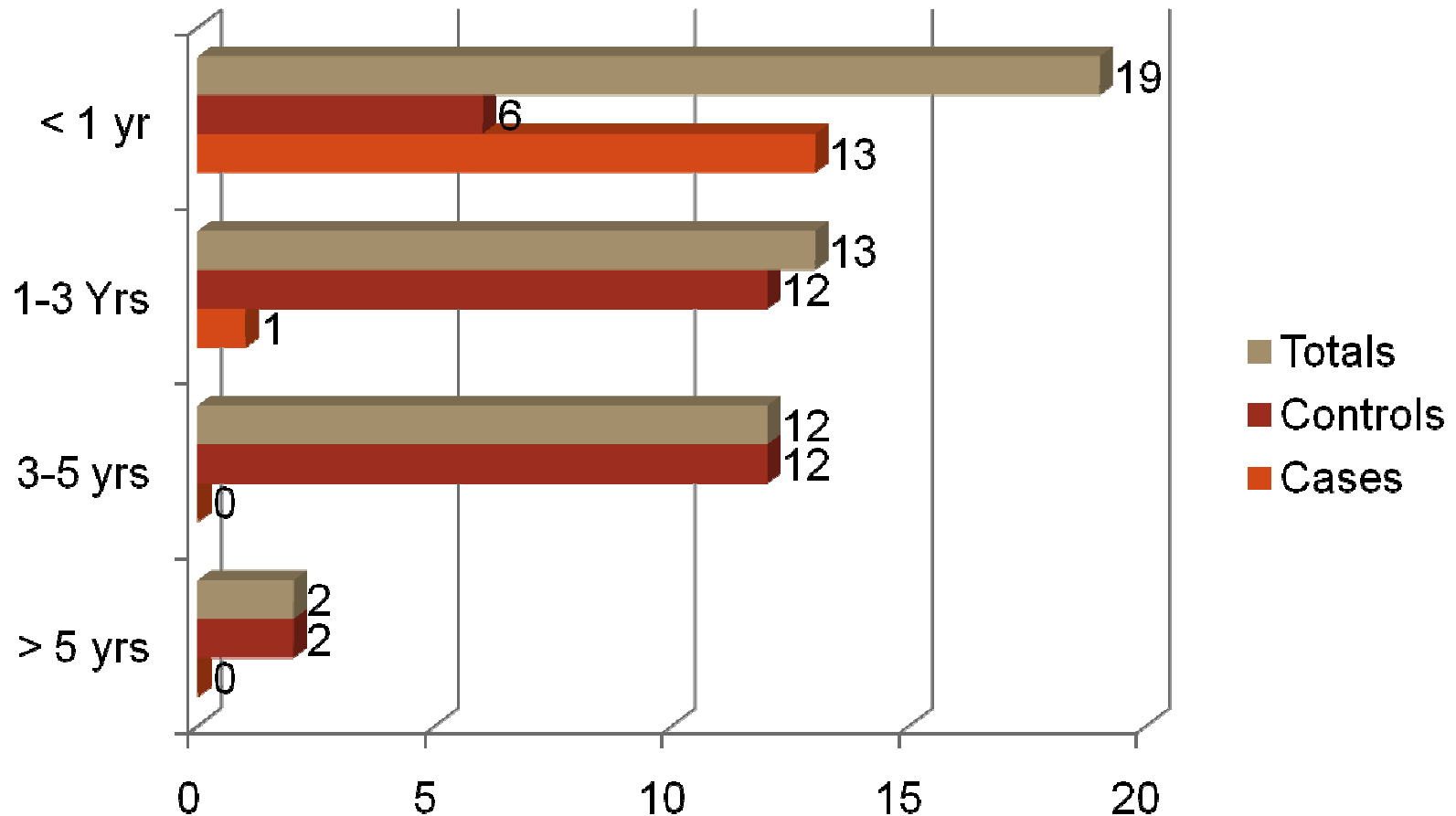
	TES	No TES	Number
Exposed to Arc-air	a = 13	b=32	45
No exposure to Arc air	c=1	d= 55	56
	14	87	101

OR 6.015, CI 95% (1.08-54.86), p 0.002
Unmatched .

Presence of TES by Age group



Presence of TES by time in job



Odds Ratio 2.

OR 22.34 , CI 95% (2.8-178.9),p 0.002

Conclusions

- Strong association shown. Statistically significant.
- This does not prove causation.
- Various bias were identified.
- Confounders were identified and shortcomings were acknowledged there as well. (someone may have had latent disease or non clinical disease and be unaware of it)
- Lack of skill, training, familiarity; the lack of administrative ergonomic and physical controls.