The Effectiveness of Behavioural Intervention for Acute Whiplash Associated Disorder (WAD) II

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Whiplash Associated Disorder (WAD)
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- Increased incidence (Holm et al., 2008)
- The UK = ‘Whiplash Capital of Europe’ (Mooney, 2012)
- The UK incidence 300,000 people annually (Burton, 2003)
Whiplash Associated Disorder (WAD)

- The risen of cost of claims 7 to 14 £ billion

(Mooney, 2012)

http://www.publications.parliament.uk/pa/cm201314/cmselect/cmtran/117/117vw56.htm
Whiplash Associated Disorder (WAD)

- 40-60% chronic conditions
  
  (Sterling et al., 2005; Carroll et al., 2008; Merrick et al., 2010)

- 30% moderate to severe pain and disability
  
  (Jull et al., 2011)
WAD Problems

- Physical
  - Pain (Lord et al., 1996; Thompson et al., 2010)
  - Decreased cervical range of motion (Spitzer et al., 1995; Harling et al., 2001)
  - Muscle weakness (Spitzer et al., 1995)

- Psychological
  - Fear of Movement
  - Anxiety
  - Depression (Carroll, 2011; Sterling et al., 2011; Sterling, 2014)
# The Classification of WAD

<table>
<thead>
<tr>
<th>Grade</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No neck complaint(s) or sign(s)</td>
</tr>
<tr>
<td>I</td>
<td>Neck complaint of pain, stiffness or tenderness but no physical sign(s)</td>
</tr>
<tr>
<td>II</td>
<td>Neck complaint and musculoskeletal sign(s) (decrease range of motion, point tenderness, etc.)</td>
</tr>
<tr>
<td>III</td>
<td>Neck complaint and neurological sign(s) (decreased or absent tendon reflex, weakness, sensory deficits)</td>
</tr>
<tr>
<td>IV</td>
<td>Neck complaint and fracture or dislocation</td>
</tr>
</tbody>
</table>

*(Spitzer et al., 1995)*
Behavioural intervention

- Act-as-usual
- Education
- Self-care
- Regularly exercise
Objective:

To evaluate the effectiveness of behavioural physiotherapy intervention for the management of acute Whiplash Associated Disorder (WAD) II
Method

- Systematic review and meta-analysis of randomised controlled trails
  - Pre-defined protocol
  - The Back Review Group of the Cochrane Collaboration
  - The Cochrane handbook
  - PRISMA
Eligibility criteria using PICOS

<table>
<thead>
<tr>
<th>Population</th>
<th>Acute (&lt;4 weeks) WADII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Any behavioural intervention</td>
</tr>
<tr>
<td>Comparison</td>
<td>Standard/control intervention</td>
</tr>
<tr>
<td>Outcome</td>
<td>Clinical relevant outcomes base on the International Classification of Function, Disability and Health (ICF)</td>
</tr>
<tr>
<td>Study design</td>
<td>Randomised controlled trial</td>
</tr>
</tbody>
</table>
Method

- Two independent reviewers searched up to 1\textsuperscript{st} January 2014
  - PEDro, Medline, Embase, AMED, CINAHL, PsycINFO, and Cochrane Library
  - Key journals (e.g. Spine, Manual Therapy, Physiotherapy, etc.)
  - Reference lists
  - Grey literature
  - Active researchers
Method

Risk of bias assessment

Cochrane RoB tool

Kappa Measure of Agreement
Method

Data extraction

Comparability

Meta-analyses

Intervention

Outcome measurement

Time point
Study selection flow diagram (Moher et al., 2009)

Identification

Records identified through database searching (n = 268, 230) Additional record identified through other sources (n = 6, 5)

Screening

Records after duplicates, and article clearly not meeting criteria from the title removed (n = 85)

Excluded (n = 54) (Abstracts not meeting criteria)

Edibility

Full text article accessed for eligibility (n = 31)

Full text articles excluded (n = 25)
Reason for exclusion:
- Chronic WAD: 20
- Subacute (> 4 weeks) WAD: 5
- Acute WAD I-III: 23
- Not RCT: 18
- Not relevant studies: 12
- Protocol publication: 2
- Reviews: 5
- Other languages: 8
(Each study may have several excluded reasons)

Included

6 trials included in qualitative synthesis

Trials included in quantitative synthesis (meta-analysis)
6 trials: behavioural vs standard/control interventions
Results

- Included 6 RCTs (Borchgrevink et al., 1998, Bonk et al., 2000, Schnabel et al., 2004, Ferrari et al., 2005, Vassiliou et al., 2006, Ottosson et al., 2007)
- 987 participants across 4 countries (Germany, Norway, Canada, Sweden)
- All high risk of bias
- $K = 0.87$
Summary Quantitative Synthesis

<table>
<thead>
<tr>
<th>Behavioural vs standard/control interventions</th>
<th>$I^2$ (%)</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain intensity (VAS) at 6 weeks</td>
<td>70.0†</td>
<td>-12.90, 2.19</td>
<td>0.164</td>
</tr>
<tr>
<td>at 6 months</td>
<td>44.2</td>
<td>-15.37, -1.55</td>
<td>0.016*</td>
</tr>
<tr>
<td>CROM in coronal plane at 3-6 months</td>
<td>0.0</td>
<td>0.93, 4.38</td>
<td>0.003*</td>
</tr>
<tr>
<td>horizontal plane at 3-6 months</td>
<td>0.0</td>
<td>0.43, 5.46</td>
<td>0.027*</td>
</tr>
</tbody>
</table>

* Statistical significance
VAS at 6 months

Borchgrevink 1998

-4.50 (-12.58, 3.58) 44.23

Vassiliou 2006

-11.60 (-18.15, -5.05) 55.77

Overall

($I^2 = 44.2\%, \ p = 0.181,$
$z = 2.40, \ p = 0.016$)

-8.46 (-15.37, -1.55) 100.00

NOTE: Weights are from random effects analysis

Favour behavioural intervention  Favour standard/control intervention
Discussion

- Although statistically significant, findings were not clinically significant.
- High risk of bias trials reduces confidence in findings.
- Very low level of evidence according to the Grading of Recommendations Assessment, Development and Evaluation system (GRADE).
Conclusion

Behavioural intervention may be useful for reducing pain and promoting cervical mobility in patients with acute WADII in the short-medium terms.
Dr. Alison Rushton
Prof. Joan Duda
Dr. M. Sayeed Haque
Mohammad Madi
References

- Burton K. Treatment guideline: is there a need?. Proceeding of whiplash conference; 2003 6th-8th May; Bath. Lyons Davidson Solicitors.
References (cont.)

- Mooney H. Insurance companies are reeling from the number of claims being made by people who say they have whiplash injuries. Secondary Insurance companies are reeling from the number of claims being made by people who say they have whiplash injuries 1st February 2012.