Reduced or painful jaw movement after collision-related injuries
A large population-based study

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FROM ABSTRACT

Background.
The authors report the incidence of and factors associated with reduced and/or painful jaw movement after motor vehicle collisions that resulted in whiplash-associated disorders (WADs).

Methods.
All adults filing collision-related personal injury claims during an 18-month period in Saskatchewan, Canada, were evaluated via questionnaire to determine demographic characteristics, precollision health (including jaw pain), collision parameters and collision-related symptoms, including reduced and/or painful jaw movement and injury-related neck pain.

The authors excluded patients who were hospitalized for more than two days and those who sustained injuries as a pedestrian, bicyclist or motorcyclist.

The authors also excluded those who had had jaw pain before the collision.

Results.
The incidence of reduced and/or painful jaw movement was 15.8% in subjects with WADs.

The incidence of reduced and/or painful jaw movement was 4.7% in subjects without WADs.

Therefore, those with WADs were 336% more likely to have reduced and/or painful jaw movement than those without WADs (relative risk=3.36).

Within the WAD injuries, the onset of reduced and/or painful jaw movement was associated with female sex; age < 50 years; having hit one’s head in the collision; and post-injury symptoms of difficulty swallowing, ringing in the ears, dizziness or unsteadiness, and more intense neck pain.

Collision parameters, such as head position at the time of the crash and headrest use and type, were not associated with onset of jaw symptoms.

Conclusions.
Reduced or painful jaw movement was more common in people with WADs than in those with other collision-related injuries.

Among those with WADs, reduced or painful jaw movement was more common in women and younger people.

Clinical Implications.
Reduced or painful jaw movement is an important aspect of WADs, and more studies are needed to determine how to best assess and treat this problem.

Abbreviations:
TMD = Temporomandibular disorder
TMJ = Temporomandibular joint
VAS = Visual analogue scale
WADs = Whiplash-associated disorders

THESE AUTHORS ALSO NOTE:

Reduced or painful jaw movement, which is a common symptom of temporomandibular disorder (TMD), can occur in patients with WADs.

“TMD consists of varying combinations of jaw pain or dysfunction, headache, dizziness and auditory disturbance, and often it is considered to be clinically relevant after collision-related injuries, especially in people with WADs.”

This study population included all Saskatchewan residents (a Canadian province of approximately 1.1 million residents), filing a collision-related injury claim between July 1, 1994, and Dec. 31, 1995.

The outcome for this study was self-reported jaw pain after the collision.

The questionnaire also asked subjects if they had hit their head and/or lost consciousness in the collision, if they experienced broken bones in the collision and if they had been admitted to a hospital and stayed overnight after the collision.

Post-collision symptoms included numbness or tingling in the arms or hands, numbness or tingling in the legs or feet, dizziness, nausea, difficulty swallowing, ringing in the ears, memory problems, visual problems, presence of low back pain and presence of dorsal back pain.

Subjects marked the extent of their pain on a pain drawing of a mannequin. Using this drawing, we then calculated the percentage of the body that was in pain.

Subjects also used a 100-millimeter visual analogue scale (VAS) to mark their neck pain, headache and other pain intensity.
RESULTS

Of the 8,109 people meeting our inclusion criteria and responding to the question about post-collision jaw pain, 1,329 (16.4%) reported experiencing prevalent reduced and/or painful jaw movement after the collision (12.4% in men and 19.1% in women).

“The incidence of new onset of reduced and/or painful jaw movement in the 7,763 subjects who reported never or almost never having experienced jaw pain before the collision was 14.9%.”

The incidence of jaw problems was higher in women (17.2%) than in men (11.6%).

“The prevalence of reduced and/or painful jaw movement in the subcohort of 7,452 subjects meeting our case definition for WAD and responding to the post-collision jaw pain question was 17.4%, again, the prevalence was higher in women (20%) than in men (13%).”

After we excluded those with pre-existing jaw pain, 15.8% of subjects reported experiencing new onset of reduced and/or painful jaw movement after the collision. The incidence was higher in women (18.4%) than in men (12.4%). “By comparison, the incidence in claimants without WAD was 4.7%, which means that WAD claimants had 3.36 times greater risk of experiencing reduced and/or painful jaw movement after the collision than did injured claimants without WAD.”

“Women were almost 50% more likely than men to experience the onset of jaw pain after a collision, and people older than 50 years were 35% less likely.”

“People with greater pain were slightly more likely to report experiencing post-collision onset of jaw pain.”

“For each additional percentage of body pain, the risk of experiencing onset of jaw pain rose by 1.8%, and for each additional point in pain intensity (on a 100-mm VAS), the risk of experiencing jaw pain rose by 0.4% for neck pain intensity and by 0.6% for headache intensity.”

“People reporting difficulty with swallowing after the collision were 3.75 times more likely to also experience onset of jaw pain, and those with ringing in the ears were twice as likely to report experiencing jaw pain.”

“In the subcohort of 1,128 people with incident jaw pain after the collision, the median time for this symptom to resolve was 120 days.”

22% still had jaw pain at 1 year after collision, while 78% had recovered.
DISCUSSION

“This is the first population-based survey, to our knowledge, to examine the occurrence of the main symptom of TMD: namely, reduced or painful jaw movement after a collision-related whiplash injury. Although only 4.3% of the subjects reported having experienced jaw pain before the collision, more than 15% of claimants reported experiencing this symptom within the first few days of the collision, with women having a higher rate of both pre-injury and post-injury jaw pain.”

Female sex is a risk factor for jaw pain after whiplash injury, which is consistent with the results in other studies.

“People who developed reduced and/or painful jaw movement after the collision also reported having concurrent symptoms of difficulty swallowing and ringing in the ears.”

“After a motor vehicle collision resulting in whiplash injuries, 17.4% of people reported experiencing jaw pain in the collision; among those with no history of jaw pain, 15.8% reported experiencing jaw problems after the collision.” This “suggests that whiplash injuries in a motor vehicle collision are associated with TMD.”

CONCLUSION

“We found that reduced and/or painful jaw movement was more common after a collision-related whiplash injury than after other collision-related injuries.”

KEY POINTS FROM DAN MURPHY

1) The incidence of reduced and/or painful jaw movement is 15.8% in subjects with WADs.

2) The incidence of reduced and/or painful jaw movement is 4.7% in subjects without WADs.

3) Therefore, those with WADs are 3.36 (336%) times more likely to have reduced and/or painful jaw movement than those without WADs. [Key Point]

4) During whiplash, the following increases the risk of reduced and/or painful jaw movement: being females; age < 50 years; having hit one’s head in the collision; and post-injury symptoms of difficulty swallowing, ringing in the ears, dizziness or unsteadiness, and more intense neck pain.

5) Among those with WADs, reduced or painful jaw movement was more common in women and younger people.
6) Reduced or painful jaw movement is an important aspect of WADs.

7) “Temporomandibular Disorder (TMD) consists of varying combinations of jaw pain or dysfunction, headache, dizziness and auditory disturbance, and is considered to be clinically relevant after collision-related injuries, especially in people with WADs.” [Very Important]

8) Common whiplash symptoms include: numbness or tingling in the arms or hands, numbness or tingling in the legs or feet, dizziness, nausea, difficulty swallowing, ringing in the ears, memory problems, visual problems, presence of low back pain and presence of dorsal back pain.

9) For whiplash patient evaluation, both pain drawings and the visual analogue scale (VAS) are useful tools.

10) “Women were almost 50% more likely than men to experience the onset of jaw pain after a collision, and people older than 50 years were 35% less likely.”

11) “People with greater pain were slightly more likely to report experiencing post-collision onset of jaw pain.”

12) 22% still had jaw pain at 1 year after collision, while 78% had recovered.

13) Female sex is a risk factor for jaw pain after whiplash injury, which is consistent with the results in other studies.

14) “People who developed reduced and/or painful jaw movement after the collision also reported having concurrent symptoms of difficulty swallowing and ringing in the ears.”

15) “After a motor vehicle collision resulting in whiplash injuries, 17.4% of people reported experiencing jaw pain in the collision; among those with no history of jaw pain, 15.8% reported experiencing jaw problems after the collision.” This “suggests that whiplash injuries in a motor vehicle collision are associated with TMD.” [Important]

16) “We found that reduced and/or painful jaw movement was more common after a collision-related whiplash injury than after other collision-related injuries.”