Anti-Inflammatory Drug Use and Post Traumatic Headache in Adults following a Concussion

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OBJECTIVES

- Posttraumatic headache (PTH) is common after concussion and non-steroidal anti-inflammatory drugs (NSAIDs) are routinely used for symptom relief [1,2].
- This study investigates the frequency and severity of PTH in concussed adults treated with NSAIDs during recovery and those who were not.

METHODS

Participants

- 32 male and 38 female participants.
- Age 19-78 (M=36.68, SD= 16.56).
- No previous history of treatment for headache or migraine.
- No reported routine use of NSAIDS prior to injury.
- Evaluated within 30 days of injury (M= 11.57 days, SD=8.34) at an outpatient concussion clinic participating in the North Texas Concussion Registry (ConTex).

Measures

- Subjects were grouped by self report of NSAID use during recovery from a concussion.
- Subjects completed the SCAT-5 symptom evaluation at initial clinic visit and at three month follow-up.
- Headache symptom severity from SCAT-5 was recorded as 0(One) to 6(Severe).

Analysis

- Chi Square analysis was used to determine if there was a significant relationship between sex and NSAID use during recovery.
- Chi Square analysis was used to determine if there was a significant relationship between NSAID use and for headache frequency three months after initial clinic evaluation.
- Repeated measures 2 (time) by 2 (NSAID use) with sex as a covariate was used to determine if there was a significant change in level of headache symptoms over time.

TABLE 1. *Sample Characteristics*

Age in Years M(Median)	36.7(30)
% Female	54.30%
% Non-Hispanic	87.10%
% White	84.30%
Mechanism	
Sport Related	24.30%
Motor Vehicle Accident	34.30%
Stuck by Object	11.40%
Fall	25.70%
Assault	4.30%

Figure 1. *Chi Square NSAID Use and Follow Up Headache Frequency*

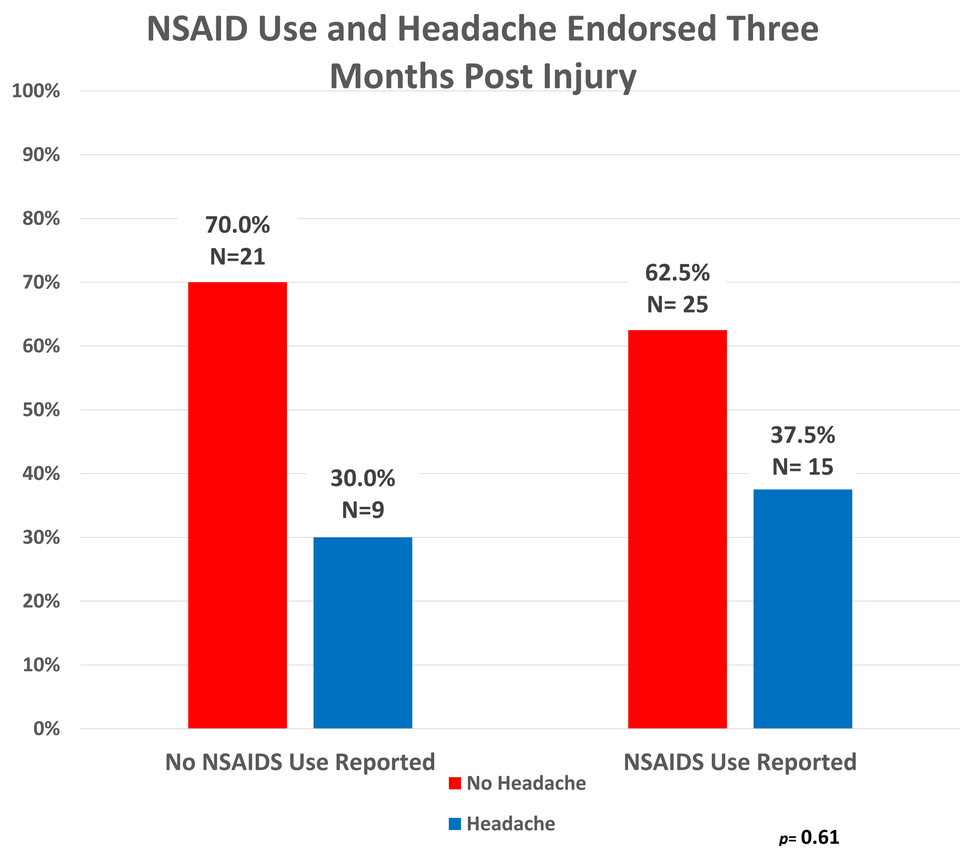
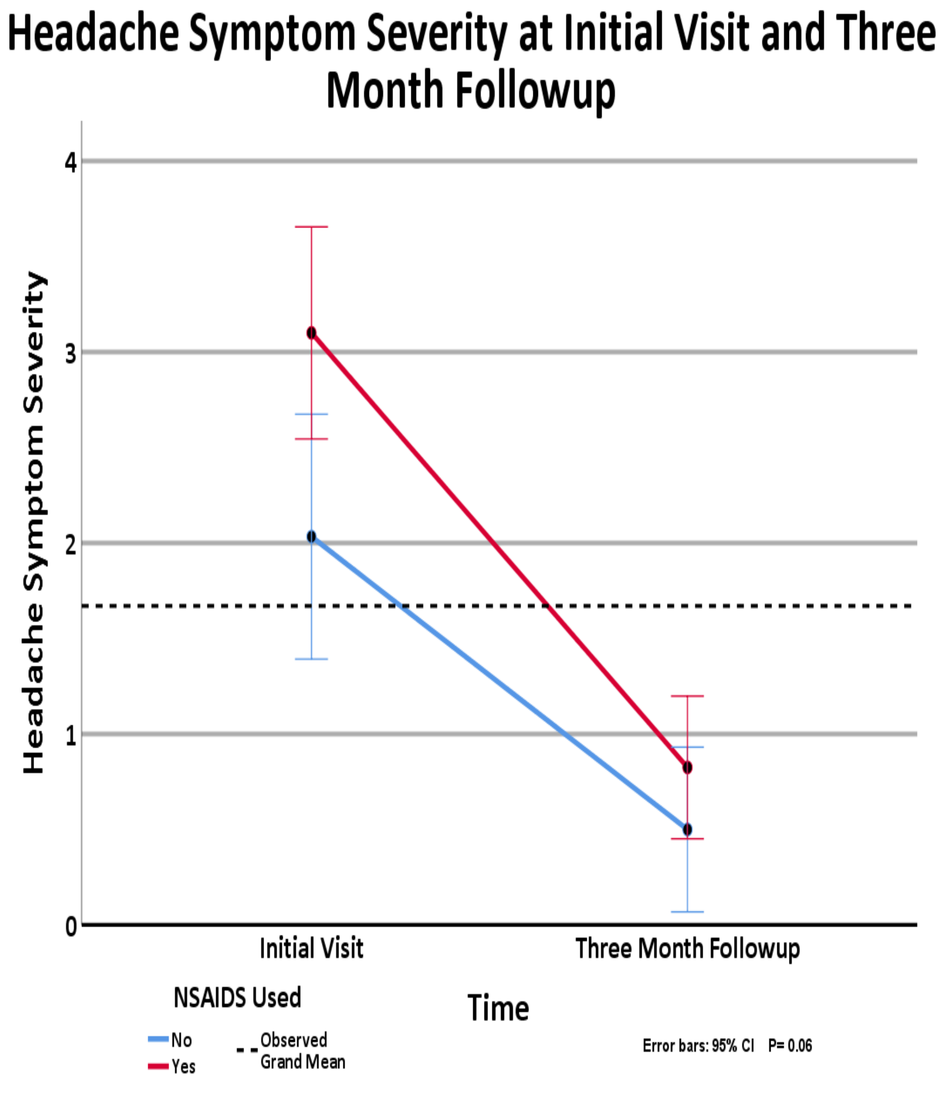


Figure 2. *Headache Symptoms*



RESULTS

- There was no difference in headache frequency at initial evaluation and three-month follow-up between subjects who used NSAIDs (n= 42) and those who did not (n=30), (χ= 0.26, p=0.61) regardless of sex.
- Subjects who used NSAIDs reported higher levels of headache symptoms initially than those who did not use NSAIDs, F (1, 67) = 5.29, p = 0.03.
- There was no interaction between time and NSAID use regarding headache severity, F (1, 67) = 1.83, p = 0.18.
- There was also no interaction between time and gender regarding headache severity, F (1, 67) = 3.64, p = 0.06.
- There was a main effect over time in reduction of headache severity, F (1, 67) = 54.51, p < 0.001.
- Differences in headache severity between the sexes was non-significant, F (1, 67) = 3.46, p = 0.07.

CONCLUSION

- Regardless of sex, in this population of acutely concussed adults headache frequency was unchanged three months post-injury for patients who used NSAIDs compared to those who did not use any medication.
- Headache severity was initially higher for those who used NSAIDS, but not significantly three months post-injury.
- Routine use of NSAIDs following a concussion may act to reduce symptoms but not frequency of headache during recovery in adults.

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REFERENCES

1. Lieba-Samal, D., Platzer, P., Seidel, S., Klaschterka, P., Knopf, A., & Wöber, C. (2011). Characteristics of acute posttraumatic headache following mild head injury. *Cephalalgia*, *31*(16), 1618–1626. https://doi.org/10.1177/0333102411428954
2. Lucas, S. (2011), Headache Management in Concussion and Mild Traumatic Brain Injury. PM&R, 3: S406-S412. doi:10.1016/j.pmrj.2011.07.016