

Analgesic Use and the Risk of Hearing Loss in Men

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FROM ABSTRACT

BACKGROUND: Hearing loss is a common sensory disorder, yet prospective data on potentially modifiable risk factors are limited.

Regularly used analgesics, the most commonly used drugs in the US, may be ototoxic and contribute to hearing loss.

METHODS: We examined the independent association between self-reported professionally diagnosed hearing loss and regular use of aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs), and acetaminophen in 26,917 men aged 40-74 years at baseline in 1986. Study participants completed detailed questionnaires at baseline and every 2 years thereafter.

RESULTS: Regular use of each analgesic was independently associated with an increased risk of hearing loss.

Multivariate-adjusted hazard ratios of hearing loss in regular users (≥ 2 times/week) compared with men who used the specified analgesic < 2 times/week were 1.12 for aspirin, 1.21 for NSAIDs, and 1.22 for acetaminophen.

The magnitude of the association was substantially higher in younger men. For men younger than age 50 years, the hazard ratio for hearing loss was 1.33 for regular aspirin use, 1.61 for NSAIDs, and 1.99 for acetaminophen.

CONCLUSIONS: Regular use of aspirin, NSAIDs, or acetaminophen increases the risk of hearing loss in men, and the impact is larger on younger individuals.

Increased Risk of Hearing Loss From Analgesic Consumption Compared to Consuming Analgesics $< 2X/wk$

	$\geq 2X/wk$ for all ages	$\geq 2X/wk$ for men < 50 y
Aspirin	12%	33%
NSAIDs	21%	61%
Acetaminophen	22%	99%

These increases of hearing loss held after adjusting for age, race, profession, BMI, alcohol intake, folate intake, physical activity, smoking, hypertension, diabetes, and the use of the other classes of analgesics.

KEY POINTS FROM THIS STUDY:

- 1) "Hearing loss is the most common sensory disorder in the US and afflicts over 36 million people."
- 2) "Aspirin, acetaminophen, and ibuprofen are the 3 most commonly used drugs in the US:"
 - 17% of the population use aspirin at least weekly
 - 17% of the population use ibuprofen at least weekly
 - 23% of the population use acetaminophen
 - >28% of men aged 45 years and above are aspirin users
- 3) It is well documented that salicylates [aspirin] have ototoxic effects such as hearing loss and tinnitus.
- 4) "High doses of nonsteroidal anti-inflammatory drugs (NSAIDs) have been shown to be ototoxic in animals and in human case reports, potentially through a reduction in cochlear blood flow."
- 5) Acetaminophen depletes glutathione; glutathione protects the cochlea from noise-induced damage.

RESULTS FROM THIS STUDY

- 1) "Hypertension was more common among regular analgesic users."
- 2) "It was common for an individual to use more than one type of analgesic regularly."
- 3) "Regular analgesic use was independently associated with an increased risk of hearing loss for all 3 types of analgesics."
- 4) "For NSAIDs and acetaminophen, the risk of hearing loss increased with longer duration of regular use."
- 5) "Those who used aspirin regularly for 1-4 years were 28% more likely to develop hearing loss than those who did not use aspirin regularly."
- 6) "Those who used NSAIDs regularly for 4 or more years were 33% more likely to develop hearing loss than those who did not use NSAIDs regularly."
- 7) Those who used acetaminophen for 4 or more years were also 33% more likely to develop hearing loss than low-level users (< 2X/wk).
- 8) "The association between hearing loss and concomitant use of more than one class of analgesic appeared to be approximately additive."

DISCUSSION

- 1) "Regular analgesic use was independently associated with an increased risk of hearing loss. The increased risk of hearing loss seen with regular analgesic use was greatest among younger men, particularly those below age 60 years."
- 2) Frequent use of acetaminophen causes hypertension and chronic renal dysfunction because acetaminophen use depletes glutathione. "Acetaminophen also might deplete endogenous cochlear glutathione, which is present in the cochlea in substantial amounts and protects the cochlea from noise-induced damage."
- 3) "The impact of regular use of multiple analgesics appeared to be additive."
- 4) 58% of older men use aspirin for cardiovascular prophylaxis.
- 5) "Regular use of analgesics, specifically aspirin, NSAIDs, and acetaminophen, might increase the risk of adult hearing loss, particularly in younger individuals. Given the high prevalence of regular analgesic use and health and social implications of hearing impairment, this represents an important public health issue."

KEY POINTS FROM THE AUTHORS

- Regular use of aspirin, acetaminophen, and nonsteroidal anti-inflammatory drugs, the most commonly used drugs in the US, increase risk of hearing loss.
- The increased risk of hearing loss associated with regular analgesic use is greater among younger men, particularly those below age 50 years.

COMMENTS FROM DAN MURPHY

Acetaminophen (found in Tylenol) was associated with the highest risk of hearing loss.

Acetaminophen also damages the kidneys and causes hypertension.

Glutathione protects the kidney from Tylenol and protects the hearing apparatus from loud noises. Strategies to increase glutathione are quite important: N-acetyl cysteine (NAC), undenatured whey protein, pomegranate juice, low-level laser, etc.

Most men who take aspirin do so for cardiovascular prophylaxis.