

Frequent use of over-the-counter analgesics associated with risk of tinnitus

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Over-the-counter (OTC) analgesics, such as aspirin, non-steroidal anti-inflammatory drugs (NSAIDs), and acetaminophen, are some of the most commonly used medications, widely available without a prescription, and perceived to be safe. But frequent use—including inadvertently exceeding a recommended dose when taking cold and sinus medications that contain these analgesics—can potentially cause harm. Very high doses of aspirin can lead to reversible tinnitus, but a new longitudinal study, led by investigators at Brigham and Women's Hospital, investigated whether frequent use of typical doses of common analgesics, including low-dose and moderate-dose aspirin, NSAIDs and

acetaminophen, or use of prescription COX-2 inhibitors, is independently associated with the risk of developing chronic persistent tinnitus. In a paper published in the *Journal of General Internal Medicine*, the researchers report that frequent use of NSAIDs or acetaminophen, or regular use of COX-2 inhibitors, was associated with higher risk of tinnitus. Low-dose aspirin use did not elevate risk, but frequent moderate-dose aspirin use was associated with higher risk of persistent tinnitus among women under 60.

"Our findings suggest that analgesic users may be at higher risk for developing tinnitus and may provide insight into the precipitants of this challenging disorder," said lead author Sharon Curhan, MD, ScM, of the Brigham's Channing Division of Network Medicine. "Even though these analgesics are widely available without a prescription, these are still medications, and there are potential side effects. For anyone who is considering taking these types of medications regularly, it is advisable to consult with a health care professional to discuss the risks and benefits and to explore whether there are alternatives to using medication."

Millions of Americans experience tinnitus, often to a disabling degree. Tinnitus is the perception of sound when no actual external noise is present. Commonly described as "ringing in the ears," tinnitus can also be experienced as many different perceptions of sound, such as buzzing, hissing, whistling, swooshing, and clicking. Tinnitus can be transient or temporary, or it can be a persistent, long-term condition.

According to Curhan, tinnitus is a common condition, potentially disabling, yet difficult to treat. In the US, about 20 million people struggle with burdensome chronic tinnitus, and approximately 3 million individuals are severely disabled by it. Among most individuals with tinnitus, the cause of their tinnitus is unknown, and the effectiveness of treatments is limited.

Curhan and colleagues conducted their research among 69,455 women who were participants in the Nurses' Health Study II (NHSII) as part of the Conservation of Hearing Study (CHEARS), a large, ongoing longitudinal investigation that examines risk factors for hearing loss and tinnitus among participants in several large, ongoing prospective cohort studies. Women were between the ages of 31 and 48 at the time of enrollment and were followed for over 20 years. The primary outcome examined was incident (new onset) persistent tinnitus, defined as tinnitus that was experienced by the participant several days per week or more. The team also examined alternative definitions of tinnitus, including persistent tinnitus lasting 5 minutes or longer and tinnitus experienced every day. Participants answered questions (before the development of tinnitus) about their use of over-the-counter pain medications as well as use of COX-2 inhibitors, a prescription NSAID with similar properties to other NSAIDS but with less gastrointestinal side effects.

The team found:

- Frequent use (6 to 7 days per week) of moderate-dose aspirin was associated with a 16 percent higher risk of tinnitus among women aged less than 60 but not among older women.
- Frequent low-dose aspirin (≤ 100 mg) was not associated with elevated risk of developing tinnitus.
- Frequent use of NSAIDs or frequent use of acetaminophen was associated with an almost 20 percent higher risk of developing tinnitus, and the magnitudes of the elevated risks tended to be greater with more frequent use.
- Regular use (2 or more days per week) of COX-2 inhibitors was associated with a 20 percent higher risk of developing tinnitus as well.

The authors note that information on tinnitus and on analgesic use was self-reported by participants. Due to the nature of the condition,

subjective tinnitus is perceived only by the individual, so the researchers needed to rely on self-reporting. The observational design of the study did not permit them to assign causality. The study population was primarily white, and all participants were female, so additional study of non-white populations and men is needed.

"Based on these findings, it will be informative to examine whether avoidance of analgesics may help alleviate tinnitus symptoms," said Curhan. "OTC analgesics clearly have benefits with short-term use. However, frequent use of these medications and use over long periods of time may increase the risk of tinnitus and may cause other adverse health effects. Therefore, it is important to take these medications mindfully and to limit their use as much as possible, and to discuss any change in [medication](#) use, whether prescription or non-prescription, with your health-care provider."

More information: Curhan, S *et al.* "Longitudinal Study of Analgesic Use and Risk of Incident Persistent Tinnitus" *JGIM* [DOI: 10.1007/s11606-021-07349-5](#)

Provided by Brigham and Women's Hospital

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