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Student's Name

University of Central Arkansas

### Acetaminophen in the Treatment of Headache Pain

Acetaminophen, the main ingredient in Tylenol, has been a controversial issue over the past few decades. The debate concerns how well the drug actually alleviates cephalodynia, or more commonly known as a headache. Many people, most the older population, believe that the drug does not relieve the pain of a headache, while the younger generations say they could not live without acetaminophen.

A headache is, “a pain in various parts of the head, not confined to the area of distribution of any nerve,” as quoted from the *Stedman’s Concise Medical Dictionary for the Health Professions*, 3<sup>rd</sup> edition. This definition, therefore, makes a headache very difficult to measure. In fact, very few studies have been conducted and published concerning acetaminophen’s efficacy in the relief of head pain, although the major use of this drug is for treatment of headaches (Fladung, Mehlisch, & Weaver, 1998). Cephalodynia, or headaches, occur usually in an uncontrolled outpatient environment and they are usually sporadic and unpredictable, making them very hard for researchers to observe (Fladung et al., 1998). In most cases, the data collection is dependent upon the patient’s/participant’s report or subjective account of the pain (Fladung et al., 1998).

Acetaminophen is one of the most common over-the-counter (OTC) analgesics used in the United States for the treatment of headaches (Fladung et al., 1998). When effective, OTC medications offer several advantages over prescription drugs, including easy access, lower cost, and fewer adverse effects (Baggish, Codispoti, Fu, Lipton, & Stewart, 2000).

Fladung et al. (1998) recently conducted an experiment to conclude if acetaminophen was effective in the treatment of tension headaches. Participants were asked to evaluate the drug over four hours following ingestion of a drug (either acetaminophen, ketoprofen, or placebo).

Pain intensity was rated as none, mild, moderate, or severe; all were recorded at different time intervals. The results of the study concluded that acetaminophen proved to be numerically more favorable than placebo, but could not be separated from placebo with statistical significance.

Hamalainen (1998) conducted an experiment to review acetaminophen and placebo in relation to the treatment of migraine headache pain in children. Patients were recruited from headache outpatient clinics. Patients were asked to administer a single dose (15 mg/kg) of acetaminophen at the onset of the headache at home. Figures showed that 54% of the children with severe or moderate migraine attacks were significantly relieved by a single dose of acetaminophen at two hours after taking the drug. The study also concluded that acetaminophen can be very easily swallowed, especially in liquid form.

Baggish et al. (2000) studied the efficacy of acetaminophen in the treatment of migraine headaches. Baggish reports that 19-26% of people in Western Countries experience migraine headaches. Of that population, 90% treat their migraine with over-the-counter medications. The United States, in 1998, approved the first OTC agent as a treatment for migraine headaches. Baggish also states that studies previous to his experiment report acetaminophen as the drug of choice for migraine sufferers. Many reasons for this have been found. One reason being that acetaminophen is not associated with gastrointestinal tract irritation and it also has only weak anti-inflammatory activity. This study was conducted two hours after dosage with either acetaminophen or placebo, and participants were asked to record if they experienced a change in baseline pain intensity from severe or moderate pain to mild or no pain. The study concluded that acetaminophen was highly effective for treating pain, and the drug also had an excellent safety profile and was well tolerated by participants.

Although many people use acetaminophen for treatment of different types of headaches, other research needs to be conducted in order to test the validity and reliability of this drug. After reviewing the literature, it is the researchers' hypothesis that there will be statistical significance in acetaminophen being an effective treatment of headache pain.

## Method

### *Participants*

Fifty participants, twenty-five males and twenty-five females who chronically experience headaches, will be randomly selected from Conway Regional Medical Center. Participants will range in age from approximately twenty to sixty years of age.

### *Apparatus/Materials*

Several items will be needed for this study. A notebook, a pencil, and a stopwatch are all necessary to record and time the duration and severity of the headache pain. Acetaminophen and Placebo are also necessary for the experiment in order to determine if either have an effect on reducing the headache pain.

### *Procedure*

The study will be a single-blind study, where the participant does not know whether they are taking Acetaminophen or Placebo. Participants will be randomly assigned to two groups; one will be taking Acetaminophen first and the other group will be taking Placebo first. The order of the pills will then rotate back-and-forth between the two options. The Acetaminophen and Placebo are the same shape, color, and taste. The pills are going to be kept in a rectangular-shaped box and the participant has to take the pills in order from left to right. Only the researcher will know which pill the participant has taken.

At the onset of pain (headache) the participant is to record the degree of pain they are experiencing. The pain will be scaled on a likert scale where “0” represents no pain and “5” represents severe pain. The participant is to record the time the pill (either Acetaminophen or Placebo) is taken and the participant is also to record the sequence written on the pill. Every hour (for four hours) the degree of pain is to be recorded by the participant. Each time the participants experience a headache the above process is to be conducted until all ten pills are taken, or until two weeks has elapsed. The data will be collected from each participant after the two-week period. The data will then be analyzed by the experimenter.

### Results

It is hypothesized that acetaminophen is an effective treatment of headache pain. To analyze the data, the experimenter must consider the severity of the pain which has been rated on a likert scale; “0” representing no pain and “5” representing severe pain. The researcher will also summarize the data by using the mean to be a measure of central tendency. The mean pain rating for each participant under each condition will be calculated. Also, a mean for each condition across all participants will be calculated. A bar graph will then be used to portray the results of the study. The graph will have the dependent variable, or likert scale of pain ratings, along the “Y-axis” and the independent variable, or Acetaminophen and Placebo, along the “X-axis”. The experimenter will also conduct a correlated-groups t-test to show whether there is a significant difference between Acetaminophen and Placebo.

## References

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