

Experiment on flu vaccine results



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If it were one thing that everyone wish they could avoid, it would be the flu virus. From taking different precautions to taking pre-medications, there are lengths one would go through to avoid this happening to them. Why the concern? The flu is very contagious and it is a respiratory illness that can really affect a person's whole body. Symptoms can be mild or severe and vary depending on what strand of the flu the person has caught. In this study, the goal is to discuss the two different types of flu vaccines that are being presented. One being the popular flu shot which is available virtually everywhere, including your primary physician, while the other is a nasal spray. Speaking in regards to what is more common amongst children and adults would be the flu shot, although many are skeptical about getting the flu shot due to their being little proof that the vaccines are effective, the shot can often cause flu symptoms, and some citing that "influenza is not a serious enough threat to inject something in their body they are unfamiliar with." (CDC, 2017-2018) Much like the flu shot, the nasal spray is available as well and is often preferred as it is easier to take and does not cause the same pain in your arm. However, there is also some hesitation due to similar symptoms occurring as one who has taken the flu shot. For this study, there were 1, 000 participants who were split into two different study groups. The first group were administered the flu shot while the other set of participants were given the nasal spray. What's important to know is that neither of the treatment options prevented all of the participants from coming down with flu symptoms, however high-performance numbers did suggest that each treatment was effective. For the participants who were administered the flu shot, 80 out of the 500 participants did develop the flu, and for the participants who were administered the nasal spray, 120 people developed

the flu. Still a success? That could be subjective, but let's dive deeper into this study.

Hypothesis

For this study, the researchers were looking to figure out which of the flu vaccines was more effective. One being the flu shot, and the other being the nasal spray vaccine. Once the researchers completed the experiment, they then collected the data and evaluated their findings. Because the researchers were experimenting with two different samples, it was appropriate for them to utilize the independent t-test that would “select two samples and compute the sample mean for each.” (Tanner, 2016) By doing so there would be an indication that the null hypothesis would demonstrate the comparisons of each vaccinations would be identical. For the above study of the two vaccinations, the null hypothesis was accepted and confirmed because there was a sufficient amount of evidence collected in the experiment. On the other end and in regards to the alternative hypothesis, the information that was provided does not produce enough evidence to support that one is more effective than the other even though both were shown as being effective. These vaccines are very valuable to consumers because they not only fight the flu, but are helpful in preventing it. It should be taken seriously as there are now different strands of the flu which sometimes can be deadly.

In this study, the lower p-value was shown to have great importance statistically, proving that the hypothesis was accurate. The decision to utilize 1, 000 participants was a good call on the end of the researchers and was

found to be a suitable number for the topic that was being studied. When you get into number consideration it can be tricky trying to figure out what is going to be more effective. For this experiment, a large number of participants was needed as there was a need for more data. Some shortcomings to this experiment could have stemmed from using a smaller number as there would have been a less amount of variances in the different participants. This larger number provided a more broad area to study.

Limitations

As with most studies there are going to be some limitations and although there were not too many observed here, the obvious limitation has to do with the fact that there has been more of a study and more discussion around the flu shot than that of the nasal spray. One thing to also take into consideration as indicated early in this paper is that the flu shot also has many different strands and the vaccines in the flu shot have been more updated to fight off those different strands more so than the nasal spray. Another limitation was the groups that were selected for the study. Not much information was made available regarding the 500 people that were selected for each of the studies. Some things that should have been considered would be the gender and age of the participant along with the climate. Climate plays a big role in how the flu can impact people especially in areas where there is constant change in weather. Many researchers have pointed out that people typically are more receptive to the flu in changing environments. Also, work environment should have been taken into consideration, especially because the flu is very contagious and many times individuals are

in closed environments where they can be infected by touching, breathing, etc.

Conclusion

After this experiment, there should be a follow-up with the participants. I would be interested in knowing how they felt about the flu shot versus the nasal spray, specifically around any preconceived feelings about each, because in society the nasal spray isn't as "talked about" as the flu shot and not all the time do people want to try new things. In addition, I would like to know which vaccine they would plan on using in the future. If I were conducting a study on this, there isn't much I would have changed and I think the researchers did well with applying analytical anecdotes that would help them support their hypothesis.

Essay Two

The purpose of this study is to discover the correlation between high IQ scores and a student's GPA. To jump start this study, researchers determined that the correlation between a student's GPA and IQ scores was .75. It was because of this score that researchers determined there was a significant amount of statistical data shared between the two variables. Our text indicates that "the evidence for the relationship is that the characteristics co-vary." (Tanner, 2016) such as they do here. The correlation that was identified is a positive correlation because with a high IQ there is more of a likelihood that a person will have a higher GPA. Although they are related, the correlation doesn't support that all individuals who have an high IQ will have a high GPA. There are some variables to take in consideration. For <https://assignbuster.com/experiment-on-flu-vaccine-results/>

example, a IQ test measures memory, math ability, analytical thinking, and spatial recognition, but it doesn't measure the amount of information you have learned as it measures a person capacity to learn. What this means is that a person can input a lot of information in their brain, but will their output make them a successful student if they don't know how to utilize working memory.

Results

The correlation between having a high IQ and having a high GPA does not offer sufficient evidence that having a high IQ would support a high GPA. It does good at suggesting that a person with a high IQ could have more of a possibility at getting a higher GPA, finding it easier to retain information. There were multiple variables to consider here, and not all of those variables were made available in this study. One that sticks out to me, is the way in which information is retained and used. People are able to retain information, but not everyone is capable of accessing that information. Learning is sometimes a skill that has to be taught, and not all the time are student's able to " call on" that information that has been learned and apply it to their studies to get that high GPA.

Correlation and Causation

Causation represents an event that is the direct result of another event. When considering correlation, this is more about a relationship between two different occurrences. When referring to something as a correlation, we aren't saying that one caused the other, it just means that we have identified a connection between the two. Something to consider when attempting to

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separate these two terms. A person could be a domestic violence offender. It has been said that typically offenders have a history of child abuse that causes them to develop these acts when they grow up due to imitation in cognitive development. That would be more of a correlation as opposed to a causation that could be having unprotected sex which leads to an STD.

Conclusion

Correlation does help with relating having a high IQ with performing well in school, but there are many different factors that could also attribute to this. One thing often discussed in school and in the professional world is a person's will. A person could in fact be very smart and able to interpret information being presented to them, but if they don't have the will to be successful then it doesn't matter how much of a high IQ that person has. Another thing to take in consideration is economic status and the amount of available resources. Unfortunately, quality education can sometime come at a price that not everyone is able to afford. Taking this research into my own hands, I would have utilized the independent t-test which would be helpful in uncovering more evidence for this correlation.

Essay Three

The purpose of memory assessments are to display the functionality of human memory and its effectiveness. For this experiment, researchers performed the assessment of twenty different participants. Information that was documented consisted of their reaction time. Below is the data that was collected from the experiment.

Data that has Been Collected

The outcomes for the initial set of faster lower scores disclosed the following calculations:

Table one

Lower Data Set	Descriptive Statistic	Calculation
2. 2	Mean	3. 48
2. 5	Median	3. 3
2. 7	Mode	N/A
2. 9	Standard Error	0. 297695
3. 1	Standard Deviation	0. 941394
3. 5	Sample Variance	0. 886222
4. 1	Kurtosis	-1. 5709
4. 3	Skewness	0. 190223
4. 7	Range	2. 6

4. 8	Minimum	2. 2
	Maximum	4. 8
	Sum	34. 8
	Count	10

The outcomes for the initial set of the slower or higher scores disclosed the following calculations:

Table two

Higher Data Set	Descriptive Statistic	Calculatio n
7. 3	Mean	9. 24
7. 6	Median	8. 85
8. 1	Mode	9. 5
8. 2	Standard Error	0. 707452
8. 5	Standard Deviation	2. 237161
9. 2	Sample Variance	5. 004889

9.3	Kurtosis	6.86883
9.5	Skewness	2.443916
9.5	Range	7.9
15.2	Minimum	7.3
	Maximum	15.2
	Sum	92.4
	Count	10

Statistical Analysis

The two sets of data have obvious difference in the value sets as the division of the two sets was constructed on their values, therefore the first set less with all the statistical calculations being less than the first set except for the number of points of data, or the count, which is identical for both sets. The sum of the two data sets is different within the sum due to the higher recorders is almost three times greater than the sum of the recorded lower data. The slower data as well has a greater variance score than the faster data. The range within the two sets is also vastly different as the range for the slower data set is more than three times of the range of the faster data collection.

Outliers in the Upper and Lower Data Sets

While there does not seem to have any outliers within the faster response time data set, there is unquestionably an existence in the slower response time set in the 15.2 outcome as this data point is almost six points greater than the next response time in the higher data point. This outlier has numerous effects on the data set sample. The first effect is that the range, sum, and median increase significantly if the outlier is extremely greater than the other data sets. The impact sustains to be true if the outlier is considerably lower than the last of the data points in the set, only the skew displays in the opposite direction. Therefore, though the outliers may have some importance they may also expose errors in the technique and the calculations of the statistic conclusion.

Descriptive Statistics

The researchers then utilized the data set records two different times which resulted in a double lower evaluation score and also a double set of the higher evaluation scores. The two data sets descriptive statistics calculations are shown in the below tables with double examination scores for the faster examination study participants in Table three and also the doubled stats of the slower examination study participant's scores in Table four.

Table Three

Doubled Higher Data Set	Descriptive Statistics	Calculation
2.2	Mean	3.48

2. 2	Standard Error	0. 204888
2. 5	Median	3. 3
2. 5	Mode	2. 2
2. 7	Standard Deviation	0. 916285
2. 7	Sample Variance	0. 839579
2. 9	Kurtosis	-1. 49733
2. 9	Skewness	0. 17372
3. 1	Range	2. 6
3. 1	Minimum	2. 2
3. 5	Maximum	4. 8
3. 5	Sum	69. 6
4. 1	Count	20
4. 1		
4. 3		

4. 3

4. 7

4. 7

4. 8

4. 8

Table Four

Doubled Higher Data Set	Descriptive Statistics	Calculation
7. 3	Mean	9. 24
7. 3	Standard Error	0. 486902
7. 6	Median	8. 85
7. 6	Mode	9. 5
8. 1	Standard Deviation	2. 177493
8. 1	Sample Variance	4. 741474
8. 2	Kurtosis	4. 727574
8. 2	Skewness	2. 231898

8.5	Range	7.9
8.5	Minimum	7.3
9.2	Maximum	15.2
9.2	Sum	184.8
9.3	Count	20

9.3

9.5

9.5

9.5

9.5

15.2

15.2

Conclusion

When the two data sets showed as doubling, it caused a change in the number of values, while the other values did not show any signs of changing. The areas that did not show any changing were the max, min, mean, range, and median. The values remained identical to the values <https://assignbuster.com/experiment-on-flu-vaccine-results/>

before the researchers did the doubling adjustment. The skewness, the kurtosis, and the sum all changed when the scholars doubled the data. The size of the sample allows for a larger amount of data to be compared. When there is a greater amount of data available, typically, there is a greater capability of being able to understand and examine the results. However, in this study, the outliers, which only exist on the higher end of the statistical data collection range, the data points should be skewed only so much that the results have the possibility for misinterpretation, which scholars do not want when they set about to assess the results from the study and are analyzing the meaning of the results.

Part II: Research Study Critique

The study critique comes from an article about the study of the safety of hydrocodone research for adults that are opioid-experienced that have lower back pain that has been categorized to be moderate to severe by the doctor of the individuals. Adults that are opioid-experienced are individuals that over their lifetime have utilized pain medications that are categorized to be opioids or opiates, as a way to decrease or diminish their pain completely. There are a variety types of chronic pain that affects a vast amount of American individuals every year, this research sets out to conclude if a new extended release form of the pain medication hydrocodone is more effective and also safer than the most common prescribed hydrocodone by doctors. Scholars believe that the most commonly prescribed hydrocodone that is not timed release cause more issues than it resolves. For example, individuals that live with chronic pain, and are prescribed immediate release opiate medications, the individuals have to take ibuprofen or acetaminophen to

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help them with their pain management. When an individual takes high doses, or for over an extended period, acetaminophen can cause the individual to have liver damage. Thus, being able to reduce medications that cause liver damage within individuals living with chronic pain is essential. Scholars also dreaded that the short-term effects the immediate release hydrocodone medication might possibly lead the patients to abuse the drug, which could result a possible overdose or even damage to the liver.

Nevertheless, the scholars believed that that extended release hydrocodone option, if the patient only takes it two times a day, which would ensure that the levels of the medication would be consistent within the individual, should alleviate some of the immediate release hydrocodone dangers and at the same time increase the amount of time that the patient's relief of the chronic pain that is provided by the medication. Scholars hypothesized that individuals with chronic back pain would experience decrease in pain through the course of their treatment, while taking less analgesics for breakthrough pain, and thereby they would be able to experience an better quality of life if they keep taking the extended release medication regime.

Method

The study consisted of five-hundred and ten participants that needed to meet specific criteria to assist in the study. The participants in the study had to not pregnant, could not be breastfeeding females or male that are between the ages of eighteen to seventy-five years old. The participants have relatively good health, they have to have experience with opiates and the effects from the opiates, have a diagnosis of chronic lower back pain,

that is between the lowest rib and the buttocks. The participants must have pain that is present for several hours during the day that has been present for more than three months and the pain has been documented to greater than a four on the pain rating scale. The scale ranges from zero, which is no pain, to ten, which is the severest pain that is imaginable. The evaluations that is utilized the tools, standard deviation, range, mean, and probability.

The research had two sections. The first section comprised of a steady change from the participant's normal opiate medication to the dose of hydrocodone that is time release. The second section of the study comprised of substituting the participant's normal hydrocodone for the placebo. To determine the effectiveness of the research participants to continue the same dose that is tolerated, of either medication, for a minimum of seven days and indicated that they were having a pain level that stayed at four or below four for twenty-four hours at the least. The effectiveness of the medication was also determined if the participants level of pain stayed lower than a four of the pain scale for another seven days and that the participants utilized less than two other medications were utilized during any given day of the seven-day period. The participants documented their pain scores daily in an electronic diary and the participants had to stay on the dosage that was prescribed to them to stay in the study.

Results

The study proved intriguing results. The baseline determinations appeared the same throughout the parallel demographic classifications. After the completion of the study the results displayed a significant decrease in the

scores of the standard deviation and the mean within the comparison to the data of the baseline. The following results of the study donated that the group that was given the extended-release hydrocodone treatment vs the group given the placebo (0.48 ± 1.56 vs 0.96 ± 1.55 ; $P = 0.008$) (Rauck, 2014). The results direct the scholars to declare that the hydrocodone extended-release has more success to decrease pain than the long-term hydrocodone versus the effects of lowering pain that was observed in the portion of the study where the placebo was utilized (Rauck, 2014). Although, the extended-release hydrocodone works to decrease an individual's pain, but there is still no evidence that over an extended period the extended-time-release hydrocodone will not cause damage to the liver or possibly increase the chance of chemical dependency.

Discussion

The results from of the study coincide with the scholar's hypothesis, which is that the hydrocodone that is extended release offers more pain relief seemingly with fewer risks that the hydrocodone that is immediate release. The study provided strong points of the hydrocodone extended time release medication as an effective treatment for pain and in addition the placebo may even alter the participant in the studies pain level, their thoughts, which then would reduce the participant's pain without having to deal with the harmful narcotic medications. The weaknesses of the study included the participants within the study. The study had a prerequisite of the participants, the scholars could have also included individuals that suffer from chronic pain that had more than just chronic back pain, but also individuals that suffer from chronic pain due to any variety of injuries. After <https://assignbuster.com/experiment-on-flu-vaccine-results/>

adjusting the requirements for the participants for the study the scholars could then utilize the chi-square test, because subdividing individual categories may help in deciding studies in the future, by dividing the participants into treatment groups by the participant's injury that has caused the individual to have back pain, to decide if the outliers in the scholar's original data sets are the result of one category of injury to the lower back. The limitations of the study included only conducting the study on one type of pain. At this point the chi-square test would allow the scholars to determine whether the extended-release hydrocodone or the placebo is effective or ineffective throughout a variety of pain categories and in different locations of the body. The study did not make any type of indication of the participant's weight as a factor that contributes to the effectiveness of the either medication. Even though the scholars put a restriction of the individuals that has a weight that is greater than the body mass index $> 45 \text{ kg/m}^2$, besides this restriction there was no other mention of weight is shown, this could be a variable that has been potentially overlooked.

Conclusion

Scholars believe that doctors prescribe too many hydrocodone that are immediate release and searched to figure out if a new hydrocodone that is an extended time release would prove to be more effective to decrease if not eliminate pain and could potentially carry lower risks. The study had five-hundred and ten participants that are in reasonably good health that are suffering from chronic lower back pain participate. The participants were put into two groups, half of the individuals were given the hydrocodone that is <https://assignbuster.com/experiment-on-flu-vaccine-results/>

extended time released and the other half was given the placebo. The group of individuals that were given the placebo displayed to have less reduction in pain overall, the fact that their pain decreased when they used a non-narcotic painkiller is telling. The conclusions also do display a decrease in chronic pain with the hydrocodone extended release group of participants though scholars should do a future study to determine if the extended release hydrocodone's long-term effects on individual's kidneys and determine a percentage for potential abuse of the medication versus the most prescribed hydrocodone.

References

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