
Representative questions, hypotheses, predictions

Rubric category	Question	Hypothesis	Prediction
testable, aligns	<i>Is age a factor in determining whether human health is improved by parasites?</i>	<i>If people with IBD between the ages of 20 - 70 are infected with whipworms, then those between the ages of 20 - 45 years old will show more improved symptoms than those who are 46 - 70 years old.</i>	<i>People with IBD between the ages of 20 - 45 years old will show more improvement than those between the ages of 46 - 70 years old.</i>
testable, does not align	<i>How does the fitness of those exposed to parasites affect their overall health?</i>	<i>If a female between the ages of 20 and 45 are exposed to parasites, then they will have less severe symptoms of IBD.</i>	<i>Women who are between the ages of 20 and 45 will have less severe cases of IBD.</i>

Representative experiments

**Rubric
category****Experiment****Most details
missing**

There will be a control group that does not receive the whipworm. There will also be an experimental group that does receive the whipworm. After the experimental group receives the whipworm, the scientists will collect and analyze data between the two groups and then they will draw their final conclusion. They will then evaluate their experiment.

**A few details
missing**

They would need a control group and an experimental group both with IBD. Both groups would need to be monitored before the study to determine their level and severity of symptoms. The control group would not be exposed to whipworms, but continue their sanitary routines, and the experimental group would be exposed to whipworms (as long as they consented and were treated after the experiment was over). After infecting the experimental group they would wait a predetermined amount of weeks. After, they would test the symptoms of everyone with IBD and determine if the experimental group's symptoms had decreased.

**Detailed
experiment**

To test their hypothesis, you'll need a control group and an experimental group. The independent variable here is the whipworms. First, you'd need to gather people with IBD, say 200. Then you'd want to randomly choose 100 of those people to take part in the experiment, but still make sure there's diversity. Next these people must be randomly divided into the control and experimental groups. Their symptoms should be measured for a month, and then a scale could be created to assign quantitative values to the severity levels. Once a baseline is clear, the experimental group would be infected with whipworms, while the control group would not. Then, symptoms would be remeasured for a month in both groups, and using the scale, scientists would give new values to anyone whose symptom severity changed. To analyze the data, you could find the average change in severity in both groups and compare these values. If the experimental group has a greater average negative change (meaning symptoms were becoming less severe), the hypothesis would be confirmed.

Representative results interpretations

Rubric category **Results interpretation**

Interprets results correctly
(Agree)

I agree with the claim because according to the data, 20-45 year olds improved with the whipworms and the 46-70 year old did not improve.

I agree with this claim because the data shows more change in severity in the younger group. The data shows that the two volunteers in the 46-70 age group saw no change in the severity of their symptoms, even though one had the parasite and one did not.

Interprets results incorrectly
(Disagree)

No. There were only two participants over the age of 45 in the entire experiment, and only one was infected. Although the infected ones' symptoms did not improve, I don't think there is enough evidence to make that a confirmed statement.

No, because all of the people that received the treatment were from the 20-45 age group save one, and there isn't enough data to compare to other age group to make that conclusion.

Unclear
(Neither agree nor disagree)

Until larger populations are tested and statistical analysis is done, nothing conclusive can come of this test.

Neither of the two volunteers in the 46-70 age range improved despite one being infected and the other being uninfected.

Representative student decisions about the use of parasites to treat IBD

Rubric category **Decision with rationale**

Used data

Yes, because the results showed more improvement in the subjects that were infected with the whipworms than those who were not.

Yes, the results showed that whipworms were effective on those who were lean and between the ages of 20-45. Since I fall within that category I think I would have a high chance of improvement.

Wanted more information

I would not. This is a tiny sample size and doesn't explore side effects of whipworms.

No. I would not feel comfortable trying whipworms based on this experiment. One, I don't feel there are enough participants who participated in the experiment to confirm that the whipworms work. Also, the experiment does not explain if any side effects were caused by the whipworm, so I would not feel comfortable risking my health.

Did not use data

I would try anything to get the symptoms to go away, so yes.

I would take them, as I don't seem them being of any permanent harm and could see it possibly improving my symptoms.
