Take Home Exam 2: E

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***Hypothesis***

If Cervical Cancer is the second most commonly diagnosed cancer in India, still there would be decreased awareness about its symptoms, risks, and attitude towards cure".

***Null Hypothesis***

“If Cervical Cancer is prevalent in India, then mothers and daughters should be well educated about the diagnosis, risk factors, and initiatives towards treatment."

***Predictions***

Several Predictions are made regarding the awareness about the type of cancer and heed towards "risk factors."

If the hypothesis would be correct, then there would be less awareness about cervical cancer and the knowledge about the risk factors because India has a low education rate, especially feminine knowledge. Females residing in rural areas are not well educated; women are too shy and unaware of the facts and figures. So, it can easily be affirmed that lack of education and lack of feminine education especially in rural areas is enough to assert that there would be a decreased ratio of awareness in mothers and their daughters.

If null hypothesis would be correct, cervical cancer is the second highly occurring disease in India so mothers and daughters should be well aware of the prevalence of disease. Taking into account the fact that despite lack of education and feminine education, cancer is something that is dealt with serious attention so there should be a relatively high ratio of awareness regarding the disease and its risk factors.

***Experiment***

The experiment included a cross-sectional study in which questionnaires were distributed among hundred mothers and daughters. The families with the history of disease were excluded from the experiment group. After collecting the filled questionnaires, comprising information about the risk factors, symptoms and the attitude towards the disease, data was entered into an excel sheet and analyzed by using a software SPSS. The standard deviation and mean was calculated for continuous variables whereas frequencies and proportions were used for categorical variables. In the end, the Chi-squared test was utilized to compare the proportions and qualitative varibales1. The experiment was used to understand the measure of understanding about cervical cancer and awareness about the risk factors.

The results of the experiment ensure a low level of knowledge about cervical cancer in the daughters and their mothers. About 61% of the mothers and 52% of the daughters had heard about the cervical cancer before2. In terms of symptoms, about 50% of mothers and 44% of daughters were aware of the common symptoms (intermenstrual bleeding) while (postmenstrual bleeding) was recognized by 33% of daughters and 47% of mothers, the same population knew about menorrhagia as a symptom of disease3. The most common risk factors recognized by mothers was followed by consumption of tobacco and smoking while genital herpes was the least identified symptom in mothers and daughters, (12% and 13%)4. In a nutshell, there is a low account of the population who was aware of the disease.

***Results***

The results support the hypothesis taking into account that there would a decreased awareness of cervical cancer, its symptoms, risk factors and basic knowledge about the disease.

***Learnings***

The article was very helpful and interesting because I found a two-dimensional scope. At one side, I found a practical implication of scientific method, how a step by step logic is used to know the validity of the predictions. I came to know about the further features of a single step, for example, the experiment itself has several steps, and each step paves the way for another avenue of knowledge. I became aware of the stance of cervical cancer, how knowledge and type of knowledge influence our daily life by considering and highlighting that education matters a lot in causing a cure to the disease. I learned about the symptoms, risk factors, and epidemic about cervical cancer, side by side I came to know about the fact that softwares can be used to calculate data and obtain percentiles to know about numeric values.

***Part 2: Genetics:***  
  
a. A TT (tall) plant is crossed with a tt (short plant).

What percentage of the offspring will be tall? **ALL TALL**

b. A Tt plant is crossed with a Tt plant.

What percentage of the offspring will be short? **25%**

c. A heterozygous round seeded plant (Rr) is crossed with a homozygous round seeded plant (RR).

What percentage of the offspring will be homozygous (rr)? **50%**

A homozygous round seeded plant is crossed with a homozygous wrinkled seeded plant.

What are the genotypes of the parents? **RR x rr**

What percentage of the offspring will also be homozygous? \_0%\_\_\_\_\_\_ What is the genotype of all of the offspring? **ALL WHITE**

d. In pea plants, purple flowers are dominant to white flowers.

If two white flowered plants are crossed, what percentage of their offspring will be white flowered? **ALL WHITE**

 A white flowered plant is crossed with a plant that is heterozygous for the trait. What percentage of the offspring will have purple flowers? **pp×PP, 50%**

Two plants, both heterozygous for the gene that controls flower color are crossed.

What percentage of their offspring will have purple flowers? **75%, Pp ×Pp**

What percentage will have white flowers? **25% white**

e. In guinea pigs, the **allele for short hair is dominant.**

What genotype would a heterozygous short haired guinea pig have? **Hh**

What genotype would a purebreeding short haired guinea pig have? **Hh**

What genotype would a long haired guinea pig have? **HH**

**Show the cross for two heterozygous guinea pigs. (Punnett Square)**

What percentage of the offspring will have short hair? **75%**

What percentage of the offspring will have long hair? **25%**

***Part 3: Biochemistry:***  
  
An enzyme will                          if the pH or temperature is not optimal.

1. catalyze more reactions
2. synthesize
3. **denature**
4. become angry and hostile

Which of the following are typically products of photosynthesis?

1. oxygen and carbon dioxide
2. **glucose and oxygen**
3. carbon dioxide and water
4. water and glucose

*C*6*H*12*O*6+6*O*2→6*CO*2+6*H*2*O*+energy is the balanced chemical equation for which of the following?

1. photosynthesis
2. glycolysis
3. **cellular respiration**
4. Krebs cycle

The energy needed to start a chemical reaction is called the                  .

1. reaction energy
2. **activation energy**
3. heat energy
4. lightning

Carbohydrates are hydrophilic and can dissolve in water while                 are hydrophobic and cannot dissolve in water.

1. proteins
2. **lipids**
3. nucleic acids
4. enzymes

Which statement describes cellular respiration?

1. **The process of decomposing chemical energy stored in bonds into energy that can be used by the cell**
2. The process of creating food for the cell
3. The process of combining oxygen and water to produce another substance to be transported
4. The process of making proteins

What organic compound makes up enzymes and structural parts of the body, such as hair, nails, and muscle?

1. **proteins**
2. nucleic acids
3. carbohydrates

What are the reactants called in an enzyme-catalyzed reaction?

1. Carbon dioxide and water
2. Inhibitors
3. Active sites
4. **Substrates**

End Notes

Ahlawat, P., Batra, N., Sharma, P., Kumar, S., & Kumar, A. (2018). Knowledge and attitude of adolescent girls and their mothers regarding cervical cancer: A community-based cross-sectional study. *Journal Of Mid-Life Health*, *9*(3), 145. doi:10.4103/jmh.jmh\_45\_18 Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6166420/>