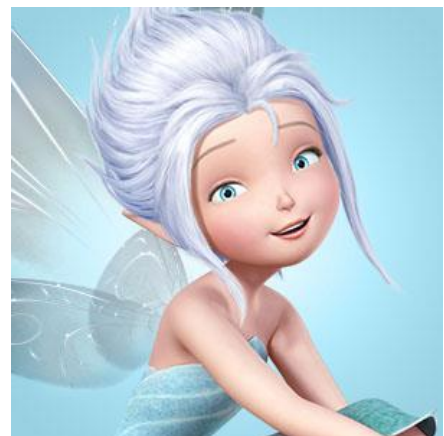


Solvit Assignment by ธนยุรัตน์ บังเส็ง

A young entrepreneur from Oklahoma named Rodney Johnson created a household cleaning product made from byproducts of the corn industry. This product, called Solvit, is very good at cleaning up grease and dirt, and was more effective than many other well-known products such as Mr. Clean, Fantastik, and Lysol. Mr. Johnson started marketing the product in 1992 at stores in his native Oklahoma, and also on the World Wide Web. Twenty years later this product is the most widely used cleaning agent in North America, although it still has not been introduced in several states. In 2012 Consumer Reports magazine determined that the product contained solvents that might cause depressive disorder. It asked the Consumer Products Safety Commission to ban the product. The Institute of Medicine was asked for its advice. The IOM learned that you had taken this course and has asked you to consult on epidemiologic evidence and methods that might support the claim that Solvit produces depressive disorder.

By right, only the Refugee Health Assignment or the Solvit Assignment is supposed to be done, each of which should total around 1,500 words (although the word limit can be bypassed via pdf). However, I have done both as I wished to evaluate peers from both sides. If I'm not mistaken, the better of the two marks is used. This is worth 20 points and 10% of the overall grade.



**How would you go about determining whether Solvit produces depressive disorder? Select two epidemiologic research designs that you might use, and briefly compare and contrast the strengths and weaknesses of the designs for this issue. State which design you favor and why. Be sure to identify the sources of information you relied upon to inform your decisions.**

In order to determine whether Solvit has contributed in the development of depressive disorders over the past 20 years (1992 – 2012) a detailed study has to be undertaken to make reliable statements. To answer the questions if Solvit is responsible for depressive disorder in the population, two research designs, capable of answering the questions, exist. Namely the case-control-study concept as well as the cohort study concept. Detailed information on both study methods can be found on the internet, such as Wikipedia and educational resources.

#### Case- Control- Study:

A case- control- study is a retro-perspective (looking back) approach of examining a set of “cases” (affected people) and a “control” group (not affected people, or “healthy”). For both groups an examination is done whether they have come into contact with known risk- factor(s) for the disease in question. If there is a significant difference between both groups in question, this could mean a correlation between the known risk- factors and the disease itself.

In comparison with other research panels, case- control- studies are a relatively inexpensive as the information needed can be easily collected from medical archives and other existing medical documentation. Most of the time a case- control- study design is used as an initial study, where hardly anything is known about a possible association between the disease of interest and potential risk factors.

#### Cohort Study:

A cohort study monitors the direct connection between one or multiple events (e.g. an infection) and the development of a specific disease. To discover this connection, a group of people (affected or non-affected) is being monitored over a certain period of time to evaluate the course of the disease (e.g. lethal or non- lethal).

A cohort study allows the direct disposition of incidences and is a possibility to evaluate the absolute risk of the disease in question. An example of a cohort study is that the research team follows a group of people who do not have the disease for a period of time and see who develops the disease during a predetermined period of time.

In comparison with other research panels, a cohort study requires a lot of participants and study personnel, which makes this kind of research rather expensive and very time consuming.

As both types of studies have their pros and cons the specific research question determines which method should be used. If sufficient historic data with a high level of data quality exists, the most resourceful research type is the Case- Control- Study method. However, researchers have to work with the data on hand and additional data cannot be obtained. On the other hand, the Cohort Study is future orientated and the suitability of the collected data can only be determined at a later stage.

Never the less, during the ongoing Cohort Study, the research study can still be altered to in case some obstacles in the research questionnaire appear or the research question has to be restated.

**Describe results that might support or refute the claim. Describe the measures of association of depression with use of Solvit that might be produced in each design. Discuss available evidence from the lectures that might make interpretation of research results connecting depression to use of Solvit difficult, including at least three variables that might confound findings of an association of Solvit with occurrence of depression.**

To support the hypothesis whether Solvit does indeed produces or increases the amount of patients with depressive disorder, a detailed study has to be undertaken. As Solvit has already been on the market for 20 years (1992 – 2012), enough medical records should be available to support or refute the stated hypothesis.

As sufficient data is available, the most suitable research type is the Case- Control- Study type. The results from the collected data records are divided into four categories:

- Solvit user and depressive [exposed],
- Solvit user and not being depressive [exposed],
- Non-Solvit user and depressive [not exposed],
- Non-Solvit user and not being depressive [not exposed].

To investigate whether the usage of Solvit increases the chance of developing depression, the researchers have to investigate if there are connections between the cases.

For instance, if there is a connection between the usage of Solvit and an increased chance of developing a depressive episode, the results in the study should show a higher number of Solvit users being depressive (1) than the Non-Solvit users also having a depressive (3) disorder. Likewise, if Solvit is not contributing to the development of a depressive disorder, the research results should show no significant difference between Solvit users not being depressive (2) and the group of Non-Solvit users without a depressive episode (4). However, if Solvit should indeed contribute to the development of a depressive disorder, the figures will show that a significant number of people will develop a depressive disorder in conjunction with the usage of Solvit.

Nevertheless, the research neglects other possibilities or variables that might have contributed to the development of a depressive disorder of a patient or does not fully explain why some patients taking Solvit develop the said depressive disorder and some patients do not.

All that can be said with the given information (based on the historical data of patients taking Solvit) is that there is a conjunction between the development of a depressive disorder and the usage of the medication "Solvit". However, this interesting finding does not answer the question whether the medication (Sovit) itself or a possible interdependency between Solvit and another medication, which the depressive patients might be consuming, is increasing the number of affected patients.

Further investigation has to be conducted to clarify whether Solvit itself or a combination with another medication or an unknown variable is responsible or contributing to a depressive disorder of some patients.