**Familial Care and Patient Care: Testing if Having Siblings Is Independent of Having Opinions on Letting Patients with Incurable Diseases Die**

[Tyriek Warren

Independent Samples T-Test]

**Introduction**

The purpose of this study is to observe if a sample of people that has siblings is independent of a sample of people that possess an opinion of whether patients with incurable diseases should be allowed to die. This study will explore a currently contested debate in Medical Ethics and Public Health. Furthermore, this study may serve as a cited reference for policy makers, research organizations, medical institutions, and others in drafting policy, research, or for general argumentative purposes of currently contested medical ethics. Overall, such research may be beneficial because it could externally validate current medical literature. This study will conduct an Independent Samples T-Test to compare means and observe statistical phenomena.

**Data and Methodology**

This study incorporates the use of two variables that are taken from the GSS08 dataset. They are called SIBS (Label: “Number of Brothers and Sisters”) and LETDIE1 (Label: “Allow Incurable Patients to Die”). The independent variable is LETDIE1, and the dependent variable is SIBS. SIBS is a scale level variable (which is imperative for an Independent Samples T-Test) while LETDIE1 is a nominal level variable. There are no control variables used in this study since an Independent Samples T-Test is being conducted. The unit of analysis is at the Individual level. For this study, the research question is the following: Is there a statistical difference in people who have siblings who are willing to let people with incurable diseases die or live? The study predicts a Directional hypothesis (H1) that people who have siblings are more statistically likely to answer “yes” to letting those with incurable diseases die. The null hypothesis (H0) is that there will be no statistical difference between those with siblings who answer “no” and “yes” to the question of letting people with incurable diseases die.

This study shall assume that the input values for the LETDIE1 variable (as observed within the Variable View of the GSS08) of 0 = “No” and 1 = “Yes” are the only relevant values that the respondents provided by recoding the original variable. The original coders of the GSS08 also provided the variable values of 7 = “Inapplicable (IAP),” 8 = “Do not Know (DK),” and 9 = “No Answer (NA)**.”** However, utilizing these other input values is impossible for an Independent Samples T-Test; the use of these additional input values would require the use of an Analysis of Variance (ANOVA) at minimum. Furthermore, utilizing these input values would not produce the results that this study anticipates discovering. Overall, the use of additional input values far exceeds the scope of this study.

*Analysis*

The statistical technique that is relevant to this study is the Independent Samples T-Test. This technique was selected since the research question is concerned with comparing the means between a scale level variable and a nominal level variable. Furthermore, the Independent Samples T-Test is appropriate to test the hypothesis (H1) because Levene’s Test of Quality of Variance can determine if the variance between the values is assumed to be equal or not. Also, a dependent scale level variable—in conjunction with the nominal level variable—is essential to determine if the two groups assumed in the test are independent from each other. If the two groups are independent, then unique suggestions for the literature may be found.

**Results**

Once more, the research question of focus is the following: Is there a statistical difference in people who have siblings who are willing to let people with incurable diseases die or live?

*Descriptive Statistics*

Table 1 (*Descriptive Statistics*) does not account for the total of 3,000 (N) people across the U.S. contained within the GSS08 dataset. Both the SIBS and LETDIE1 variables have missing persons within the data. For the SIBS variable, it appears that 2,021 research participants (N) were accounted for in the test. Of those 2,021 people (N), 202 respondents (N) answered “No” to the question of letting those with incurable diseases die, or about 32.7(%) of the respondents. In contrast, 416 respondents (N) answered “Yes” to the question of letting those with incurable diseases die, or about 67.3(%) of the respondents. Additionally, the average amount of people who appear to have at least one sibling is high in the GSS08 sample (M = 3.66). In fact, it appears that 400 respondents (N) have two siblings, and 394 respondents (N) have one sibling. Other than the missing values, there appears to be no abnormalities in the dataset. The descriptive statistics do seem to indicate a vast difference in those who answered “Yes” and “No.” However, this data alone does not suggest any statistically significant differences; it is imperative to look at the results of the Independent Samples T-Test before drawing any conclusions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 1**  *Descriptive Statistics* | | | | | |
| **Variable Type** | **Variable Name** | **N** | **%** | **M** | **SD** |
| **Dependent and Scale** | **SIBS** | 2021 | - | 3.66 | 3.188 |
| **Independent and Nominal** | **LETDIE1**  No  Yes | 618  202  416 | 100  32.7  67.3 | -  -  - | -  -  - |

*Inferential Statistics*

The Independent Samples T-Test produced results that show statistically significant (in both the Levene’s and the study’s null (H0)) phenomena between the SIBS and LETDIE1 variables. What appears to be odd is that the 202 respondents (N) who answered “No” appeared to have a higher statistical skew (M = 4.40, SD = 3.618) when compared to the 416 respondents who answered “Yes” (M = 3.13, SD = 2.849). Therefore, it is important to observe the Levene’s Test results for clarity. Looking at the Levene’s Test for Quality of Variances results, the null hypothesis for the Levene’s Test is rejected: (F = 18.171, p < .000). Equal variances of the values within the variables are not assumed. Furthermore, the results of the t-test for the Equality of means has results that indicate that the study’s null hypothesis (H0) is rejected: t(325.941) = 4.395, p < .000. There are statistically significant differences between those who have siblings and answered “yes” or “no” to whether people with incurable diseases should be allowed to die. Also, these results make further sense when observing the confidence interval as well. When considering how confident one can be of the experiment, the values appear to be narrow within the experiment’s scope (CI has a 0.705 lower value to a 1.847 upper value). Over repeated sampling, it can be said with a 95% confidence that the true mean difference (MD = 1.276) falls between the bound (CI of 0.705—1.847) of the experiment’s Confidence Interval values. Statistically speaking, many more people within the GSS08 sample agreed that people who have incurable diseases should be allowed to die. Furthermore, the people who agreed that those with incurable diseases should be allowed to die are not independent of those who have siblings. Thus, the alternative hypothesis (H1) was also properly predicted: people who have siblings are more statistically likely to answer “yes” to letting those with incurable diseases die.

**Discussion**

The research sought to compare the means of the SIBS and LETDIE1 variables to determine if having siblings was independent of possessing the opinion of whether people with incurable diseases should be allowed to die. First, a Descriptives test was run to determine frequencies (N), mean (M), standard deviation (SD), and percentages (%). Then, an Independent Samples T-test was conducted to visualize significant values (F = 18.171, p < .000; t(325.941) = 4.395, p < .000). It was found in the Levene’s test that the results were statistically significant, so the Levene’s null was rejected. Then, the study’s null hypothesis also indicated statistically significant results, so the study’s null was rejected (H0). In sum, the decision was made to accept the alternative hypothesis (H1) and reject the null hypothesis (H0). There are statistically significant differences between those who answered “yes” and “no;” having siblings appears to not be independent of stating that people with incurable diseases should be allowed to die.

It may simply be that those with siblings imagine the theoretical suffering that their siblings could undergo if they had an incurable disease. Imagining the suffering of a loved one—especially before their demise—is known as anticipatory grief. In sum, “Anticipatory grief is a term describing the grief process that a person undergoes before a loss actually occurs” (Reynolds & Botha, 2006, p. 15). It may be possible that those who answered “Yes” to letting a person with an incurable disease die subconsciously thought of their siblings when making that answer selection. Those who selected “No” may not have had close relationships with their siblings. Perhaps a follow-up survey asking about the strength of the person’s relationship to their siblings could test this postulation.

*Limitations of the Study*

This study is primarily limited by the missing groups unaccounted for in the analysis. In addition to the 0 = “No” and 1 = “Yes” input values, the GSS08 has the input values of 7 = “Inapplicable (IAP).” 8 = “Do not Know (DK),” 9= No Answer (NA)**.** Incorporating these input values could have drastically altered the results. A follow-up study should utilize the Analysis of Variance (ANOVA) test to see if the results would have differed significantly. Furthermore, there were no true control variables in the experiment. Without the use of control variables, it is difficult to prove that the results of this study were truly significant. As discussed above, perhaps a control variable of “Relationship with Siblings” could have explained another area of the study’s results or revealed new phenomena.

**References**

Reynolds, L., Botha, D. (2006), Anticipatory grief: Its nature, impact, and reasons for contradictory

findings*. Counselling, Psychotherapy, and Health, 2*(2), 15-26. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.538.2320&rep=rep1&type=pdf>

**SPSS OUTPUT**

**Frequencies**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statistics** | | | |
|  | | NUMBER OF BROTHERS AND SISTERS | ALLOW INCURABLE PATIENTS TO DIE |
| N | Valid | 2021 | 618 |
| Missing | 979 | 2382 |
| Mean | | 3.66 | .67 |
| Median | | 3.00 | 1.00 |
| Mode | | 2 | 1 |
| Std. Deviation | | 3.188 | .469 |
| Range | | 55 | 1 |

**Frequency Table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NUMBER OF BROTHERS AND SISTERS** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 0 | 89 | 3.0 | 4.4 | 4.4 |
| 1 | 394 | 13.1 | 19.5 | 23.9 |
| 2 | 400 | 13.3 | 19.8 | 43.7 |
| 3 | 315 | 10.5 | 15.6 | 59.3 |
| 4 | 250 | 8.3 | 12.4 | 71.6 |
| 5 | 160 | 5.3 | 7.9 | 79.6 |
| 6 | 117 | 3.9 | 5.8 | 85.4 |
| 7 | 100 | 3.3 | 4.9 | 90.3 |
| 8 | 75 | 2.5 | 3.7 | 94.0 |
| 9 | 27 | .9 | 1.3 | 95.3 |
| 10 | 30 | 1.0 | 1.5 | 96.8 |
| 11 | 19 | .6 | .9 | 97.8 |
| 12 | 14 | .5 | .7 | 98.5 |
| 13 | 8 | .3 | .4 | 98.9 |
| 14 | 6 | .2 | .3 | 99.2 |
| 15 | 3 | .1 | .1 | 99.3 |
| 16 | 3 | .1 | .1 | 99.5 |
| 17 | 3 | .1 | .1 | 99.6 |
| 18 | 4 | .1 | .2 | 99.8 |
| 20 | 1 | .0 | .0 | 99.9 |
| 21 | 1 | .0 | .0 | 99.9 |
| 37 | 1 | .0 | .0 | 100.0 |
| 55 | 1 | .0 | .0 | 100.0 |
| Total | 2021 | 67.4 | 100.0 |  |
| Missing | NA | 2 | .1 |  |  |
| System | 977 | 32.6 |  |  |
| Total | 979 | 32.6 |  |  |
| Total | | 3000 | 100.0 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ALLOW INCURABLE PATIENTS TO DIE** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | NO | 202 | 6.7 | 32.7 | 32.7 |
| YES | 416 | 13.9 | 67.3 | 100.0 |
| Total | 618 | 20.6 | 100.0 |  |
| Missing | IAP | 1375 | 45.8 |  |  |
| DK | 29 | 1.0 |  |  |
| NA | 1 | .0 |  |  |
| System | 977 | 32.6 |  |  |
| Total | 2382 | 79.4 |  |  |
| Total | | 3000 | 100.0 |  |  |

**T-Test**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Group Statistics** | | | | | |
|  | ALLOW INCURABLE PATIENTS TO DIE | N | Mean | Std. Deviation | Std. Error Mean |
| NUMBER OF BROTHERS AND SISTERS | NO | 202 | 4.40 | 3.618 | .255 |
| YES | 416 | 3.13 | 2.849 | .140 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Independent Samples Test** | | | | | | | | | | |
|  | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
| F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| NUMBER OF BROTHERS AND SISTERS | Equal variances assumed | 18.171 | .000 | 4.768 | 616 | .000 | 1.276 | .268 | .750 | 1.802 |
| Equal variances not assumed |  |  | 4.395 | 325.941 | .000 | 1.276 | .290 | .705 | 1.847 |