

Grove: Statistics for Health Care Research

Instructor's Answer Key

Exercise 1: Identifying Level of Measurement: Nominal

1. **What variable is presented in Table 2? What is the level of measurement of this variable? Provide a rationale for your answer.**

Answer: The variable presented in Table 2 is depression, which was measured by the Center for Epidemiologic Studies Depression Index (CES-D), and the level of measurement for depression is ordinal. Table 2 includes four categories of depression (not depressed, mild depression, moderate depression, and severe depression). These categories of depression can be rank ordered from least to most severe level of depression. Ordinal data can be rank ordered, while nominal data cannot (Burns & Grove, 2007).

2. **How many subjects and what percentage of this sample had a CES-D score of 16 or higher?**

Answer: Forty-four of the subjects or 36.7% (rounded to 37%) of the sample had a CES-D score of 16 or higher, indicating some level of depression (mild, moderate, or severe). The number of subjects is calculated by adding $15 + 15 + 14 = 44$ subjects. The percentage is calculated by adding the percents of $12.5 + 12.5 + 12 = 37\%$, or $44 \div 120 = .3667 \times 100 = 36.7\%$ or 37%.

3. **What is the mode for employment status of the total sample and the depressed groups? Is this what you might expect for this sample?**

Answer: The mode for employment status for the total sample is retired with 63 subjects (52.5%), and retired is also the mode for employment status for the depressed group with 25 subjects (56.8%). Yes, this is what you might expect, since this sample is partially composed of patients with a variety of comorbid conditions (MI, stroke, or breast cancer) that often occur later in life when people may be retired.

4. **Which ethnic group had the most individuals who are depressed?**

Answer: The ethnic group with the most depression was Caucasian with 36 (81.8%) depressed persons.

5. **What number and percentage of the 44 depressed subjects were treated with antidepressant medications? Do you think an adequate number received treatment with medication? Provide a rationale for your answer.**

Answer: Thirteen subjects (29.5% or 30% of the 44 depressed subjects) were treated with antidepressant medications. Calculation: $13 \div 44 = 29.5\%$ (rounded to 30%). This means that 70% received no medication treatment, which is low for the level of depression in these subjects. Table 2 indicates that 15 subjects had mild depression, 15 subjects had moderate depression, and 14 had severe depression. Since 29 subjects had moderate to severe depression, these subjects might have benefited more if they had received antidepressant medications.

- 6. The researchers found that two of the participants used herbs and one used alternative therapies. Would you expect more or less use of herbs and alternative therapies in rural areas? Provide a rationale for your answer.**

Answers may vary. You might expect that persons in rural areas would use more herbal and alternative therapies since they might have less access to health care providers or be more reluctant to seek help for mental health conditions. However, people in rural areas might only use the therapies prescribed by their health care providers and therefore would not use herbs or alternative therapies. The use of herbs and alternative therapies by individuals in rural areas would make a good study.

- 7. The researchers excluded persons from the study who had a history of psychiatric illness. Provide a rationale for excluding these persons.**

Answer: The focus of this study was to examine depression and its treatment in patients with comorbid conditions (strokes, MIs, and breast cancer) and their care providers. Persons who have a history of psychiatric illness have a background that might alter or bias the study outcomes since they might have had a more severe depression, have received a variety of treatments in the past, and have different views on the effectiveness of treatments for depression. Including patients with a history of depression could alter study results focused on describing depression in patients with comorbid conditions.

- 8. In the Employment Status categories in Table 1, are the categories exhaustive for the total sample? Provide a rationale for your answer.**

Answer: Yes, the categories are exhaustive for the total sample. The 120 subjects fit into one of three categories: employed, unemployed, or retired. Thus, the categories are exhaustive for this sample.

- 9. The article states that 1 out of 10 people in the United States suffer from depression. How do the results of this study compare to this figure? How might you explain any differences?**

Answer: If 1 in 10 people in the United States suffer from depression, this would indicate a 10% depression rate. In this study, 44 of 120 subjects or 37% ($44 \div 120 = .367 \times 100 = 36.7\%$) of the subjects were depressed, which is 3.7 times greater than the U.S. depression rate. All the persons in the study were also under stress related to either their medical condition (cancer, MI, or stroke) or caring for a person who was in ill health. The article stated that these stressors can cause a greater extent of depressive symptoms. Thus, patients with comorbid conditions and their care providers have an increased incidence of depression.

- 10. How are the results from this study useful in practice?**

Answers may vary. The study results document the increased incidence of depression in patients with comorbid conditions and their care providers. Therefore, the researchers encouraged health care professionals to increase their screening and treatment for depression in these individuals. The need to diagnose and treat depression is even greater if the person lives in a rural area. The study provided a good tool to use in screening for depression, the CES-D Index. However, the small sample of mainly Caucasian subjects limits the generalization of these findings. More research is needed with larger, more diverse samples to expand our understanding of depression in patients with comorbid conditions.