Chapter 10
Outcomes Research in Gastrointestinal Treatment

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ABSTRACT

This case study describes the use of SAS technology in streamlining cross-sectional and retrospective case-control studies in the exploration of the co-morbidity of depression and gastrointestinal disorders. Various studies in Europe and America have documented associations between irritable bowel syndrome and psychological conditions such as depression and anxiety disorders; however, these were observational studies. Because it is impossible to randomize symptoms, it is difficult to isolate patients with these co-morbidities for randomized trials. Therefore, studies will continue to use observational data. In this study, all steps are conducted electronically in a rapid development environment provided by SAS technology. In addition, it examines the potential rate of health-care utilization particularly for GI disorders among individuals with depressive symptoms and anxiety disorders. We find that the proportion of patients with gastrointestinal problems and psychological disorders is typically higher than the proportion of patients with only gastrointestinal problems.

BACKGROUND

It has been previously reported that depressive symptoms are highly prevalent in the inpatient population with current gastrointestinal symptoms and vice versa. Inadomi et al (2003) reports that in the United States and Europe, one of the major reasons to visit a gastroenterologist is irritable bowel syndrome. Moreover, Drossman D. et al (2002) report that between fifty and sixty percent of IBS patients in gastroenterology clinics suffer from psychiatric disorders that exacerbate the patients’ poor quality of life, causing them to seek more medical help. This has led to theories that patients with depressive symptoms have an increased use of health care services and work absenteeism because of abdominal complaints. According to Hillilä et al (2008), symptoms of depression are common in...
the general population and are associated with symptoms in the gastrointestinal system; in turn, these cause an increase in the use of the health care system.

Other theories indicate that patients with severe irritable bowel syndrome may increase their health-related quality of life by following psychological treatments. Jackson R. et al (2000)’s review of data concludes that patients with irritable bowel syndrome found that symptoms improved with the use of antidepressants as much as four times more compared to the use of a placebo. Similarly, Creed F. et al (2005) supports the idea that IBS patients, even those without psychological disorders who do not respond positively to the usual treatment may find improvement from psychological treatment. Another hypothesis in the matter is that irritable bowel syndrome is induced by stress (Whitehead W, 1994). A study conducted by Blanchard et al (2008) measured a significant correlation between some gastrointestinal symptoms, such as IBS and dyspepsia. They found that some life stressors exist over an extended period of time. They concluded that the data support a reciprocal relation between stress and gastrointestinal symptoms rather than a relation of cause and effect. These results concur with those of an earlier study by Levy R. (1997). A great deal of literature supports the important associations between psychiatric illness and chronic medical conditions in a clinical setting.

However, the perspective of risk may be based upon erroneous information, or because what is known is incomplete, and that may bias both diagnosis and treatment. A very good example of this is in the treatment of ulcers. For many years, it was assumed that ulcers were caused by stress. The immediate ulcer was treated using antacids, but prescribed long-term treatment was generally psychological to help the patient reduce stress. Because there was a general perspective that bacteria could not survive in the acid environment of the stomach, infection was not even considered as a possibility. Yet we know now that infection by the \textit{H. pylori} bacterium is the primary cause of most ulcers, with the use of NSAIDs responsible for almost all others.(Huang, Sridhar, & Hunt, 2002; Soll & Gastroenterology, 1996)

**SETTING THE STAGE**

The data set for the year 2005 was obtained from the National Inpatient Sample (NIS), the largest all-payer inpatient care database in the United States. A ten percent sample was obtained with a sampling module from SAS Enterprise Miner. It contains data on 7,955,048 hospital stays from approximately one-thousand hospitals. From it, a random ten per cent sample from the data set for the year 2005 was obtained.

First, this set was filtered to contain the records of patients having a digestive condition as the primary reason for being in a hospital. The dataset was created by filtering on the field, DRG, diagnosis related group, on the basis of DRG values related to non-infectious conditions on the digestive systems such as irritable bowel disease, chronic diarrhea, peptic ulcers, chronic constipation, and so on. For a more complete list of the relevant codes, see Table 1. A second subset was defined for those individuals experiencing psychological disorders as the main reason for visiting a hospital. Similarly, the original set was filtered based on DRG values related to psychological conditions such as anxiety disorders, several types of depression, and so on. For a more complete list of the relevant codes, see Table 2. From these two subsets, we obtained a frequency count for hospital visits related to non-infectious digestive diseases and for hospital visits related to the psychological conditions described above.

From these frequencies, we obtained the proportion of hospital visits due to such digestive disorders and due to such psychological ailments respectively.

The second phase of the preprocessing involved determining conditional proportions with the previously built subsets. To do this, the first subset