Reviewer’s report

Title: Association between unemployment rates and prescription drug utilization in the United States, 2007-2010

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Reviewer: Joseph Ross

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In this manuscript, investigators use data from the Bureau of Labor Statistics and IMS Health to perform an ecological analysis to study the association between state-level unemployment rates and retail sales of seven therapeutic classes of prescription medications in the United States.

Major compulsory revisions

While this study is quite novel, the importance of the study is unclear. As an ecological analysis, causation cannot be inferred and it’s not clear what we are learning from these counterintuitive findings. Ideally, an analysis that differentiated trends in pharmaceutical utilization (which have been increasing over the past decades) from trends that resulted from the economic recession would be best. For instance, could a difference-in-differences analysis be conducted that compared pharmaceutical utilization in states with the smallest changes in unemployment over the course of the recession with states with the largest changes in unemployment over the course of the recession?

I also think the Introduction needs greater clarity. What is the precise hypothesis being tested (i.e., why is it expected that oral contraceptives would be used at higher rates but “lifestyle” drugs at lower rates – with more time on one’s hands, I would expect utilization of “lifestyle” drugs to increase)? The bulk of the Introduction is framed around the issue that patients are price sensitive and so they can be expected to lower utilization. But a lot of the evidence (in paragraph 3) is not directly relevant. Furthermore, it is unclear how much copays and the like changed for patients. Even if they lose their job, they may retain the health insurance coverage via COBRA or through their severance package (for a period of year, for instance). Given that the analysis is quite “macro”, I would favor an Introduction that focuses on the big picture as well but better clarifies the hypotheses that inspired the research.

Given that nearly all of the over 65 population is retired, eligible for Medicare coverage and eligible for Social Security payments, they are highly unlikely to be affected by the recession and the accompanying high levels of unemployment. I would suggest excluding this population from your main analyses and not just reporting the under 65 analyses as sensitivity analysis.

Minor essential revisions
I was surprised that there was no discussion of insurance/COBRA in the first paragraph of the Introduction.

How does rising unemployment lead to increased rates of chronic disease (htn, hyperlipid, CAD)? Is it because patients now have the time to make an appointment with a physician?

One study of the impact of the recession on colonoscopy rates:

Are all patients under 21 excluded? I would argue that they should be, since they are disproportionately eligible for public health insurance programs and parents will make different decisions about medication use for their children than they would for themselves. Furthermore, nearly all of the pharmaceutical classes studied are relevant only to adults.

Does the Bureau of Labor Statistics provide unemployment data by age? It would be more interesting to focus the analysis on age categories (21-35, 36-50, 51-64 or whatever) as younger adults were more likely to lose their “stable” jobs during the economic recession.

Does the IMS data include $4 prescriptions? It should be clear if these are included, particularly since patients with less disposable income are likely to turn to cheaper sources for prescriptions during times of economic hardship like a recession.

The finding of variation in prescription use across states is less interesting as presumably state populations have varying rates of disease for which these medications are prescribed. While this information needs to be reported in the Results, I’m not sure a paragraph in the Discussion on this finding is needed.

One strength of this study that deserves mention is that the focus was on sales, not adherence. When trying to understand whether the recession had an impact on pharmaceutical utilization, sales is key (as people are making the decision to purchase the prescription), as opposed to prescribing by physicians (since patients may not actually purchase the prescription) or adherence to the prescription (which is complicated by many other factors).

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests