

The association between drug pricing and drug shortage: A retrospective database analysis

Mohammad Alowairdhi¹, Fatimah Alhussain¹, Maha Alomran¹, Ohoud Almadani¹, Norah Alkhamash¹, Shayma Alyabes¹, Sultan Alharbi¹, Esraa Almudaiheem¹, Reem Alhaider¹, Sara Alhassan¹, Zainab Almuallem¹, Nuha Algain¹, Abdulaziz Alshehri¹,
Thamir Alshammari², and Turki Althunian²

¹Affiliation not available

²Saudi Food and Drug Authority

January 12, 2023

Abstract

Aims: Studies suggested that drug pricing might be a risk factor for drug shortage; however, a few provided a quantitative assessment of this possible causal association. This study aimed to assess whether drug prices are associated with drug shortage incidents. **Methods:** This was a retrospective database analysis study. Drugs with shortage notifications (one drug per notification) that were sent to the Saudi Food and Drug Authority (SFDA) from Jan/2017 to Dec/2020 by different stakeholders were included in the study. For each drug, the foreign-to-Saudi-price ratio (FTSPR) was calculated (FTSPR = mean international price/Saudi price). Accordingly, drugs were split into three groups: Group 1 (FTSPR >1]), Group 2 (FTSPR =1]), and Group 3 (FTSPR <1]). The primary outcomes were the ratio of mean counts (mCR) between the three groups with Group 3 chosen as a control group. The study outcomes were analyzed using a negative binomial regression model adjusting for the measured confounders. All study analyses were conducted using RSudio Version 1.2.5033. **Results:** A total of 900 drugs were included (Group 1=348, Group 2=345, Group 3=209). The mean count of Group 1 higher was higher than Group 3 (mCR: 1.88; 95% confidence interval [CI] 1.24 to 2.83), while and mean counts of Group 2 vs. Group 3 were comparable (mCR: 1.39; 95%CI 0.92 to 2.09). **Discussion:** The results of our study showed that shortage was associated with drugs that are more expensive outside Saudi Arabia. Additional international studies are needed to explore this causal association.

Hosted file

Manuscript.docx available at <https://authorea.com/users/575250/articles/618613-the-association-between-drug-pricing-and-drug-shortage-a-retrospective-database-analysis>

Figure 1. The most commonly reported therapeutic classes with shortage

