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Short communication

Panic buying or good adherence? Increased pharmacy purchases of drugs from wholesalers in the last week prior to Covid-19 lockdown

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ABSTRACT

Aims: The aim of this study was to examine the development of drug purchases during the corona crisis.

Methods: The evaluations in this retrospective cross-sectional study are based on the IMS RPM® (Regional Pharmaceutical Market) Weekly database, which shows the weekly purchases of public pharmacies from fully-stocked wholesalers at the time the pharmacy purchase is made in Germany. The outcome of this investigation was the development in psychotropic, neurological, and cardiovascular drug purchases by packing unit between Calendar Weeks 6 and 16.

Results: In analyses, performed for psychotropic and neurological drugs, compared to Week 11, the largest increases in Week 12 were for anti-Parkinson drugs and tranquilizers (both 24%), followed by antiepileptics (23%). Purchases of antidementive drugs increased by 16% between Week 11 and Week 12. The increase was 43% for vitamin k antagonists, 39% for ACE inhibitors, and 37% for betablockers.

Conclusion: The results of this retrospective cross-sectional study suggest that the Covid-19 lockdown in Germany was associated with a significant surge in purchasing behavior in pharmacies for different markets including psychotropic, neurological, and cardiovascular drugs. Further studies are needed to investigate the sell-out data and to estimate the differences in panic buying by age and sex.

1. Introduction

In February 2020, the novel coronavirus (COVID-19) became a global pandemic, with the number of COVID-19 cases increasing dramatically in many countries (Lau et al., 2020; Wang et al., 2020). Daily television and newspaper reports on the spread of the pandemic quickly triggered fears of an impending economic crisis and recession among the population (Nicola et al., 2020).

As early as February 2020, numerous reports appeared on the Internet stating that the spread of COVID-19 could endanger the supply of medicines worldwide because many drugs used globally are manufactured in China and India, where production has halted due to outbreaks of the disease. The German health minister feared that the COVID-19 pandemic would cause drug shortages in Europe, although there was no actual evidence that short-term supply shortages were occurring.

Reports that shelf-stable foods such as flour, pasta, and canned goods were quickly selling out, leading to shortages, were published in various countries (Nicola et al., 2020). At the same time, pharmacies reported

shortages of the antipyretic paracetamol due to strong demand during the corona pandemic.

No studies have yet been published on pharmacy sales of various drugs for the treatment of acute and chronic diseases during the pandemic. It could be assumed that people will be buying higher quantities of drugs and requesting more prescriptions if they fear extended quarantines. The aim of this study was to examine the development of drug purchases during the corona crisis.

2. Methods

2.1. Database

The evaluations in this study are based on the IMS RPM® (Regional Pharmaceutical Market) Weekly database, which shows the weekly purchases of public pharmacies from fully-stocked wholesalers at the time the pharmacy purchase is made in Germany. Each reporting week runs from Saturday to Friday.

In Germany, wholesalers supply pharmacies and other dispensing

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points with medicines and related products sold into the market by manufacturers and importers.

All values examined are expressed in packing units, i.e. the number of packs.

2.2. Study outcome

The outcome of this investigation was the development in drug purchases by packing unit between Calendar Weeks 6 and 16. The therapeutic classes analyzed were selected based on the Anatomical Classification of Pharmaceutical Products by the European Pharmaceutical Market Research Association (EphMRA). They were classified into psychotropic, neurological, and cardiovascular drugs. Psychotropic and neurological drugs included antidepressants (ATC: N06A), antipsychotics (ATC: N05A), hypnotics and sedatives (ATC: N05B), tranquilizers (ATC: N05C), antiepileptics (ATC: N03), anti-Parkinson drugs (ATC: N04A), antidementive drugs (ATC: N07D). Cardiovascular drugs included diuretics (ATC: C03), betablockers (ATC: C07), calcium channel blockers (ATC: C08), angiotensin converting enzyme (ACE) inhibitors (ATC: C09A, C09B), angiotensin ii-antagonists (ATC: C09C, C09D), lipid-lowering drugs (ATC: C10), vitamin-K-antagonists (ATC: B01A), and novel oral anticoagulant (NOACs) (ATC: B01E, B01F, B01X).

2.3. Statistical analysis

This study is of a descriptive nature, and no hypotheses were tested.

3. Results

Fig. 1 shows the number of packing units of psychotropic and neurological drugs purchased by pharmacies Calendar Weeks 6 and 16 with a spontaneous significant increase in Week 12. The largest increases were for anti-Parkinson drugs and tranquilizers (both 24%), followed by antiepileptics (23%). Purchases of antidementive drugs increased by 16% between Week 11 and Week 12.

The same analyses, performed for cardiovascular drugs, are displayed in Fig. 2.

Compared to Week 11, the increase in Week 12 was 43% for vitamin k antagonists, 39% for ACE inhibitors, and 37% for betablockers.

4. Discussion

To the best of our knowledge, this is the first study focusing on the impact of the Covid-19 pandemic on the pharmacy purchases of various

drugs for the treatment of acute and chronic diseases. In our study, we have shown that pharmacy purchases were significantly higher in Calendar Week 12 than in the previous week. Although there were differences between the various therapy classes investigated, the trends were very similar in all classes.

Social media has played a crucial role in spreading knowledge in the field of public health. In addition to the fear of becoming infected the virus themselves, many people prepared themselves for a possible quarantine when the virus began to spread. Should a family member fall ill with the virus, the quarantine period is at least two weeks. In severe cases, the treatment and quarantine times may be longer. It is possible that people with chronic diseases tried to stock up on the medications they need for their diseases, such as cardiovascular drugs.

The other possible reason for the increase in purchases may be a fear of drugs shortages as many drugs are produced in countries where the pandemic took hold sooner than in Germany (such as China). As a result, people tried to buy necessary medications in pharmacies while they were available. Finally, there is a possibility that consumers engaged in panic buying out of a fear that all shops and pharmacies, but also private medical practices would close.

Panic buying is not a purely German phenomenon. For example, by the middle of March, when the epidemic was spreading but nothing had been officially confirmed, signs of the panic buying of antiviral drugs had appeared in Guangdong and in Beijing (Qiu et al., 2018). Similarly, reports by the media in China that extracts of *forsythiae fructus* dried fruit, inhibited SARS-CoV-2 in vitro, it sparked panic buying of the traditional medication both online and in stores (Liu et al., 2020). Similar behaviors were observed in other countries including Japan, Australia, Italy, Spain, the UK, and the USA in March 2020 (Sim et al., 2020).

Lack of information or wrong information can lead to hysteria and panic buying (Aslani, 2020). There are a number of different explanations from a psychological point of view. This behavior may be a way of coping with a stressful, previously unencountered situation by taking steps to protect self and family. It could also be a manifestation of the conflict between the desire to maintain regular routines and the uncertainty of how long the pandemic would last (Sim et al., 2020).

From a healthcare perspective, this panic buying can have a positive effect in terms of adherence. By buying medication to cover a possible quarantine period, patients avoid therapy gaps and keep taking their prescribed drugs for as long as is recommended by physicians. Interestingly, in Germany, the significant increase in sales of long-time medications for chronic diseases occurred shortly prior to lockdown. It should be noted, however that therapy for chronic disorders such as

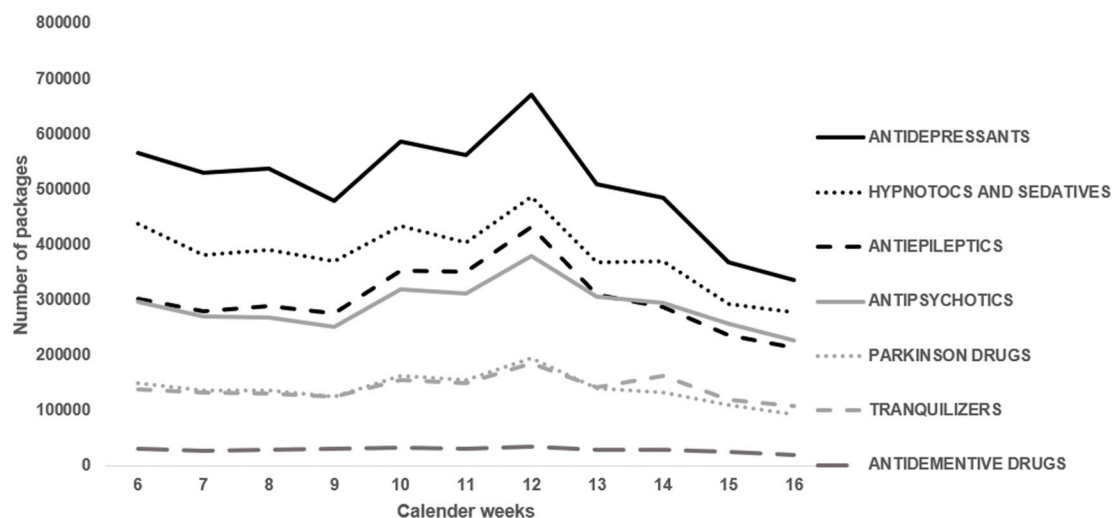


Fig. 1. Number of packing units of psychotropic and neurological drugs purchased between Calendar Weeks 6 and 16.

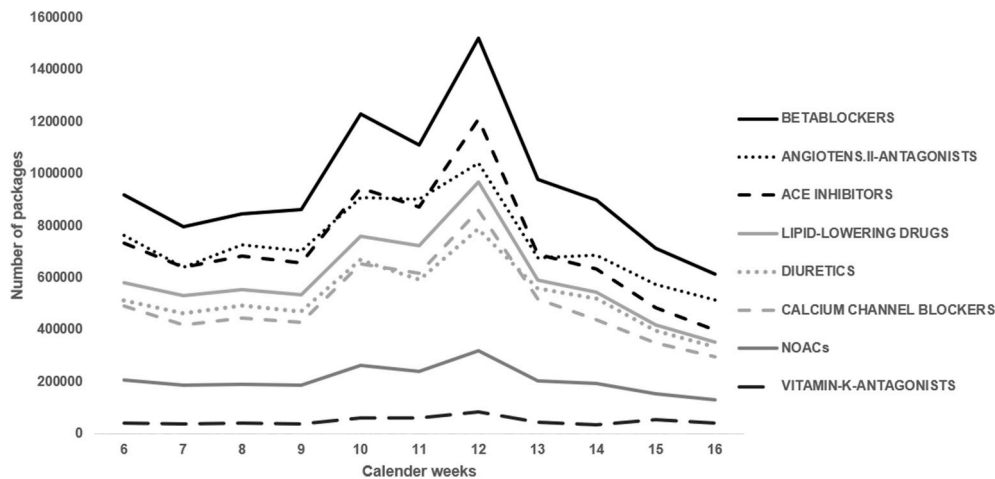


Fig. 2. Number of packing units of cardiovascular drugs purchased between Calendar Weeks 6 and 16.

hypertension requires continuous monitoring, including blood pressure measurements. Therapy must often be adapted by changing the dose, changing the medication or prescribing additional medication (Kjeldsen et al., 2014). This therapy monitoring can become rare when patients do not visit their physicians because they purchased sufficient medication purchased during the ‘panic buying week’ to last for several months. This is why it is important to investigate the visiting behavior of patients during the next few months of the Covid-19 crisis.

The smallest increase was observed for purchases of antidementia drugs. There are several possible explanations for this, but there is no clear evidence supporting any of these at the present time. The population of dementia patients is older on average than all other populations. At the same time, this population has the highest mortality rate from Covid-19 [Leung (2020); Zhang et al. (2020)]. However, the majority of these patients are supported by medical professionals (nurses) or live in nursing homes (Jacob et al., 2017). There are several factors impacting medication buying in this population, as several persons and institutions, often not the dementia patients themselves, may be responsible for pharmacy visits. That being said, in a study carried out in the United Kingdom, older people described themselves as being less likely to self-isolate than younger people (Bacon and Corr, 2020).

The findings of this secondary data analysis should be interpreted in the light of several limitations. First, the database used does not provide information on patients, diagnoses, or prescriptions. It can be assumed that there is a high degree of correlation between pharmacy sell-in and sell-out data of pharmacies in Germany. As packing units cannot be assigned to specific patients, it is not possible to stratify analyses stratified by age or sex.

5. Conclusions

The results of this retrospective cross-sectional study suggest that the Covid-19 lockdown in Germany was associated with a significant surge in purchasing behavior in pharmacies for different markets including psychotropic, neurological, and cardiovascular drugs. Further studies are needed to investigate the sell-out data and to estimate the differences in panic buying by age and sex.

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Declaration of competing interest

The author reports no conflicts of interest in this work.

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