

Impact of the Covid-19 Pandemic on Primary Care Utilization: Evidence From Sweden Using National Register Data

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Research note

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Abstract

Objective: To analyze changes in primary care utilization as a result of the Covid-19 pandemic. Swedish national register data from 2019 and 2020 on utilization of services were used to compare overall utilization levels and across types of contacts and patient groups. A specific objective was to assess the extent to which remote types of patient consultations were able to compensate for any observed fall in on-site visits. Data were stratified by sex and age to investigate any demographic pattern.

Results: Findings show significant reductions in overall utilization of services as the pandemic occurred the first quarter of 2020. On-site visits fell during the first wave of the pandemic and rebounded thereafter. Patients over 65 years of age appear to have reduced utilization to a larger extent compared with younger groups. Simultaneously, remote contacts increased from around 12% before the pandemic to 17% of total number of consultations. However, the net effect of changes in service utilization suggests an overall reduction of around 12 percent in the number of primary care consultations as a result of the pandemic. No differences between men and women were observed. Further research will continue to monitor changes in primary care utilization as the pandemic continues.

Introduction

As the Covid-19 pandemic began to spread across the world in the first quarter of 2020 the utilization of on-site health care services for non-covid related conditions fell in most countries and regions [1]. The reduction in clinic-based visits was the result of both supply and demand side effects. To reduce the spread of infections clinics were either mandated to limit on-site visits or encouraged to do so [2]. Likewise, many patients refrained from making clinic visits to decrease the risk of becoming infected [3; 4].

In parallel, the utilization of various types of remote contacts increased from current long-term trends [5–7]. The relatively rapid increase in telemedicine contacts during the initial phases of the pandemic can be seen as an indication of resilience on the part of the health system to maintain service levels in the face of an external shock. However, to fully understand the impact of the pandemic on the system's ability to continue delivering services during the pandemic, analyses need to adopt a more comprehensive approach than has generally been the case to date. First, pre-pandemic utilization trends need to be described in order to obtain a relevant baseline measure. Second, data on all types of patient consultations need to be included in the analysis. And third, monitoring of health care utilization needs to be sustained over several waves of the pandemic to assess providers' and patients' behaviors over time. Using national, register-based data on both on-site visits and remote primary care contacts in Sweden for 2019 and 2020, this study describes the changes in primary care service utilization during the first year of the Covid-19 pandemic. The current study forms part of a larger research project that aims to analyze the impact of the Covid-19 pandemic on health care service provision in Sweden.

Methods

Study design

The study adopts a cross-sectional, time-series design using daily patient primary care utilization data for 2019 and 2020 from Sweden. The data include consultations with physicians, nurses, physiotherapists, and other care professionals. Indicators include age, sex, diagnosis, and type of visit. The database (Väntetidsdatabasen, VTDB) was initiated in 2019 and not all regions reported complete data in the first year. After adjusting for missing baseline values the total sample sizes are 12,079,268 (2019) and 10,847,918 (2020), respectively, covering two-thirds of the 21 Swedish regions [see, e.g., 8 for details on the Swedish health care system].

Measures

The total number of consultations is the main measure of the study. To analyze the relevant changes that took place as a result of the pandemic this indicator is disaggregated into a set of measures as follows. First, the total number of consultations per month for each year is described. Second, the total number of consultations is then reported separately for on-site visits and remote contacts (including video, chat, and telephone contacts as well as written communications). And third, the number of consultations is described across five separate age categories and by sex, respectively. In addition, the total number of confirmed Covid-19 cases and deaths are shown to provide the context of the study.

Analysis

All data analysis was conducted using Stata 16.1 (www.stata.com). The identified measures are reported as absolute numbers and as percentages when relevant. The results of the analysis are presented in separate graphs and the aggregate data are presented in tables. The main results are presented in the main text and additional findings are provided in the Supplementary material.

Results

The Covid-19 pandemic in Sweden

In 2020, Sweden experienced two distinct waves of the Covid-19 pandemic; see Fig. 1. The first wave started in March and lasted until mid-June. In early November of the same year, the number of cases started increasing again and continued into the next year.

The first wave of the pandemic as measured by the number of daily confirmed cases is most likely under-reported due to limited testing at that stage of the pandemic.

Overall utilization of primary care

Figure 2 shows the total number of patient consultations in 2019 and 2020, respectively, for the current sample of Swedish regions with complete data for both years. Utilization in the two pre-pandemic months of 2020 (January and February) was similar to the same months in the baseline year of 2019. As the first

wave of the pandemic grew in size, the number of primary care consultations started to decrease. The reductions in April and May of 2020 were particularly large and appear to coincide with the peak in the number of confirmed deaths.

After the large decrease in the second quarter of 2020, the number of consultations rebounded and continued to increase into the third quarter of the year. The subsequent fall in December of 2020 is comparable to the corresponding month of the previous year.

Utilization by type of consultation

As noted above, the fall in the number of on-site visits to primary care clinics has been reported to be accompanied by a corresponding increase in the number of remote (or telemedicine) contacts. Table 1 reports the total number of consultations by type (see also Figure S.1 in the Supplementary material).

Table 1
Consultations by type and year

Consultation type	Year	
	2019	2020
	N	N
	%	%
Office visit	10,499,364	8,819,487
	86.9	81.3
Remote contact	320,873	269,609
	2.7	2.5
Home visit	159,844	171,380
	1.3	1.6
Phone contact	1,099,187	1,587,442
	9.1	14.6
Total	12,079,268	10,847,918
	52.7	47.3
Source: VTDB 2019 and 2020.		

In 2019, remote contacts made up 12 percent of all consultations. In 2020, this share increased to 17 percent. However, the data also show that the actual increase in the number of remote contacts is substantially smaller than the decrease in the number of on-site visits. Furthermore, the changes in

remote types of contacts appear to differ as telephone and surface mail accounted for the largest increase in remote contacts in 2020 whereas video-based consultations actually decreased, both in absolute numbers and as a share of total consultations in the current sample.

The reductions in the number of monthly on-site visits for most months of 2020 suggest that the total number of primary care consultations of that year was lower than it should have been in the absence of the pandemic. While changes vary across the current sample of Swedish regions, based in the available data, it is estimated that the total number of primary care consultations in Sweden fell by 11.84 percent in 2020 (from + 1.3 percent to - 22.13 percent; see Figure S.2 in the Supplementary material). The relative decrease in patient consultations would suggest a shortfall of some 2.7 million primary care consultations in 2020 as a result of the Covid-19 pandemic.

Utilization by age and sex

With respect to the effect on various age groups, the data show that the reduction in primary care consultations affected those over 65 years of age more compared with the younger patient groups (see Figure S.3 in the Supplementary material). Regarding any changes in primary care utilization of women compared with men, the data show that the relative share of men to women remained stable throughout 2020 and also was very similar to the baseline year of 2019 (see Table S.1 in the Supplementary material for details).

Discussion

How health systems are able to adjust to unforeseen events, such as the on-going pandemic, is an issue of critical importance for future policy development in most countries. This study finds that even in a country with a relatively well-developed primary care system and, moreover, a comparably low level of primary care utilization rate per capita, a significant number of patients have been unable to receive care as expected in the first year of the Covid-19 pandemic. While remote types of services appear to have increased as the pandemic continued to affect service delivery, such types of patient consultations have been unable to make up for the overall reduction in primary care in the current case.

The findings also suggest that the fall in services has affected both men and women to a similar extent. Given what was known about the SARS-CoV-2 virus during the initial stages of the pandemic, this would be an expected finding. More generally, the relatively larger share of women to men in primary care utilization in Sweden is consistent with that of most other countries [9].

However, the results also indicate that patients over 65 years of age saw a particularly large reduction in primary care utilization. While this would be in line with the general recommendations by disease control agencies to specifically protect this demographic group from avoidable contacts, it may imply that some patients' health needs have not been met during the pandemic. The potential long-term effects that this may have, in particular as the pandemic has continued into 2021, is a matter of both policy and research relevance.

The present study describes the overall changes in the delivery of primary care services. As such, it provides a basis on which to plan further, detailed investigations into the nature of the observed changes. Among other questions, future analyses will assess the extent to which some groups were more affected than others. For example, the effect of the pandemic on patients with chronic conditions, such as hypertension and diabetes, need to be investigated.

Another large group of patients are those seeking mental health care that may also have been particularly hit by the effects of the pandemic [10]. For example, increased suicide rates have been reported in Japan [11], while in another study covering 21 countries, no such increases were reported [12].

An additional matter of relevance is the impact the pandemic has had on antibiotic prescription levels. For example, while antibiotic prescription rates in the Swedish health care system are among some of the lowest in Europe [13], the use of antibiotics in Sweden were reduced during the Covid-19 pandemic [14]. This reduction, however, does not appear to have led to a subsequent increase in the prevalence of severe bacterial infections, such as pneumonia and sepsis. Understanding these impacts more fully is important for future policy guidance on the use of antibiotics.

A further issue is the type of remote contacts that have been used by providers during the pandemic [15]. In the present study, traditional types of remote patient consultations, such as telephone and surface mail, saw a larger increase compared with more modern approaches, such as digital telemedicine (video and chat-based). A general policy issue relates to the understanding of the effectiveness of these different types of remote care and how they should be directed across various patient groups [16; 17].

Limitations

One limitation of the study is the incompleteness of the data for the baseline year of 2019. The database was initiated in 2019 and not all regions reported data to the system from the beginning of the year. Five regions joined later in the year and two regions began reporting data in January of 2020. However, the current sample covers two-thirds of the Swedish regions, which suggests that the study's findings are largely representative of the country as a whole.

An additional limitation of the data is the absence of a patient identification number. For the purposes of the current study, this limitation was not of immediate concern. However, it does prohibit any analysis of individual patients' utilization of services across repeated illness episodes, an issue that may be of interest in future studies.

List Of Abbreviations

VTDB Vântetidsdatabasen (primary care database)

Declarations

Ethics approval and consent to participate

The study forms part of a research project that has been reviewed by the Swedish Research Ethics Authority; reference number 2020 – 04381. Consent to participate is not applicable.

Consent for publication

Not applicable.

Availability of data and materials

The dataset supporting the conclusions of this study is available in the OSF repository, https://osf.io/rp6fb/?view_only=6776f80073e940e18937b469f8e84b2e.

Competing interests

The authors declare no competing interests.

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Authors' contributions

BE and OC analyzed the data. BE drafted the manuscript. EA, HT, and JW provided support to the drafting of the manuscript. All authors read and approved the final version of the manuscript.

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Figures

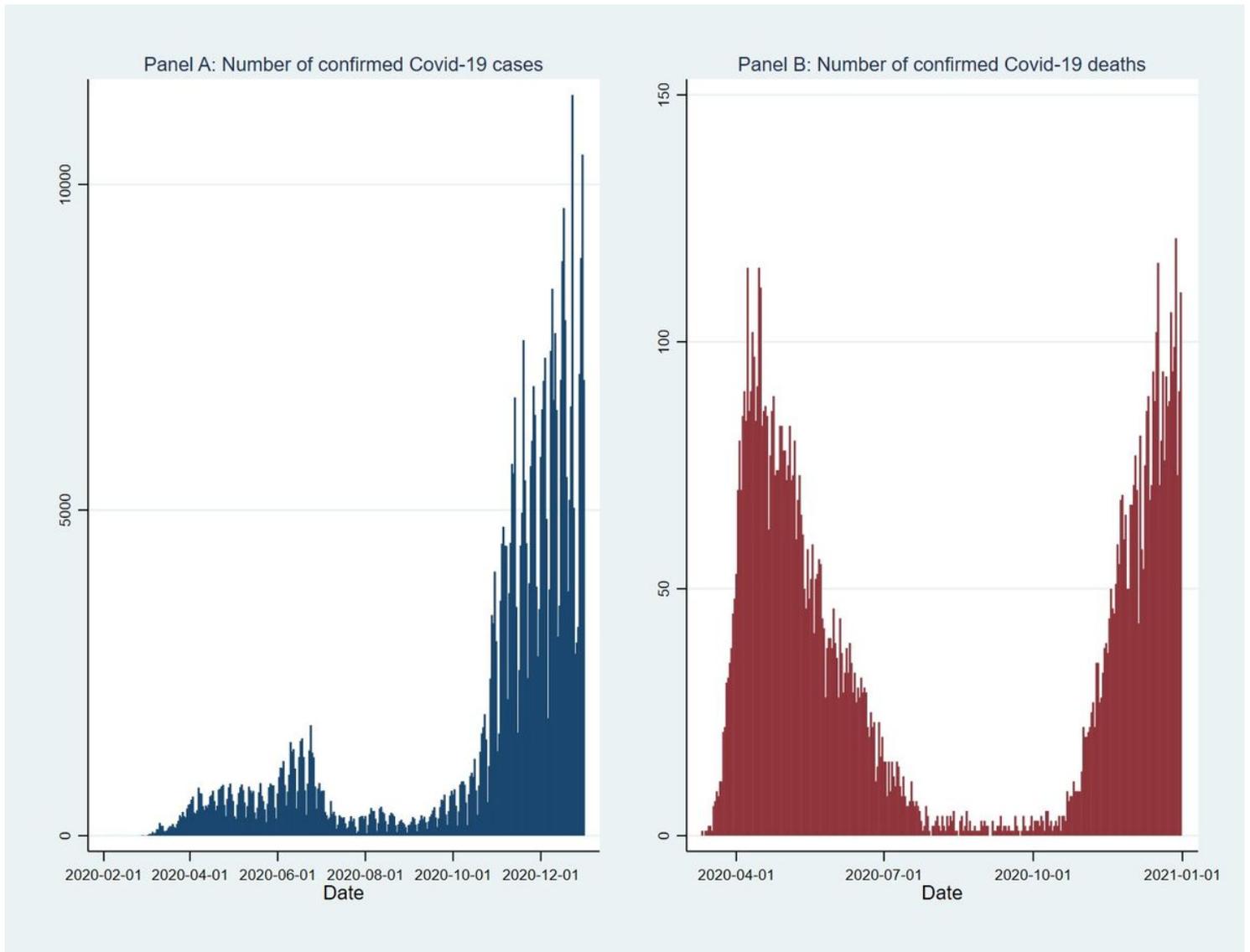


Figure 1

Covid-19 pandemic in Sweden, 2020. Source: FHM; accessed on February 15, 2021.

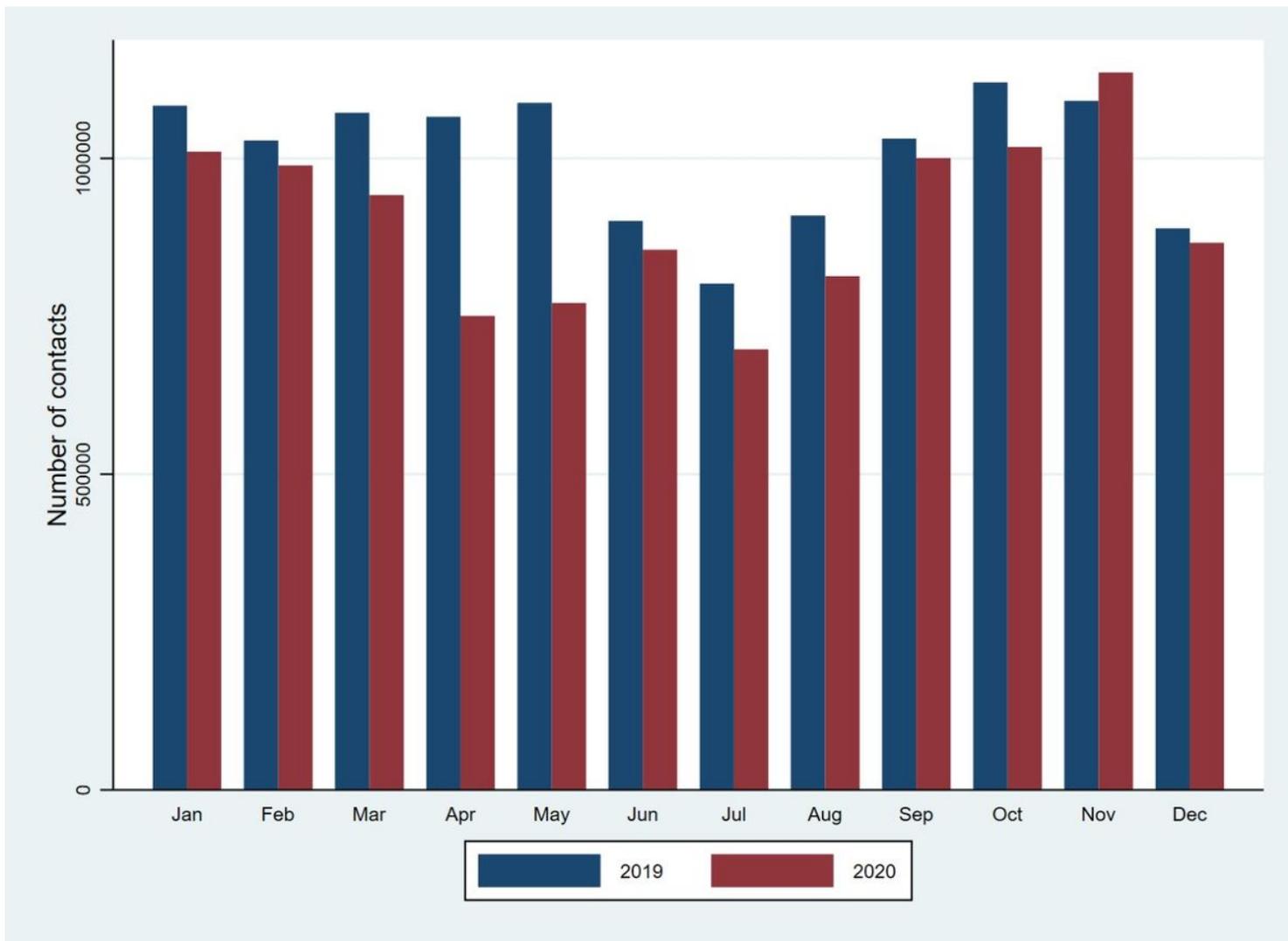


Figure 2

Total primary care consultations, Sweden (selected regions), 2019 and 2020. Source: VTDB 2019 and 2020.

Supplementary Files

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- [SupplementaryMaterial.docx](#)