



# Is Shelter-in-Place Policy Related to Mail Order Pharmacy Use and Racial/Ethnic Disparities for Patients With Diabetes?

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Effective management of diabetes during the coronavirus disease 2019 (COVID-19) pandemic is critical given that hyperglycemia is both a risk factor for infection with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and has been associated with poorer outcomes for those infected (1). Unfortunately, inadequate diabetes self-management due to medication nonadherence is prevalent among patients with diabetes and is a major contributor to poor diabetes outcomes (2,3). Research suggests that mail order pharmacy (MOP) use can improve medication adherence (3). However, there is little data on how the COVID-19 pandemic is related to MOP use. Regrettably, racial/ethnic minority patients with diabetes have poorer medication adherence than White patients, and research shows marked disparities among racial/ethnic minorities in SARS-CoV-2 infection rates and outcomes, but little is known about racial/ethnic differences in MOP use during the COVID-19 pandemic (3,4). The objectives of our study were to 1) assess the association between the COVID-19 pandemic shelter-in-place order and MOP use and 2) examine these associations by patient race/ethnicity.

We conducted a retrospective cohort study using a cohort from a randomized encouragement trial conducted in

2017–2018 at Kaiser Permanente Northern California (KPNC), the Encouraging Mail Order Pharmacy Use to Improve Outcomes and Reduce Disparities (EMPOWER) trial (3). Patients were eligible if they had diabetes, had poor adherence (proportion of days covered <80%) to at least one class of cardiometabolic medication, and had not used MOP in the prior 12 months. We used posttrial (January 2019–September 2020) electronic health record data from the EMPOWER cohort to examine the association of our region's COVID-19 shelter-in-place order (17 March 2020) with MOP use. We calculated the mean percent of fills delivered by mail in the months pre-COVID-19 (January 2019–February 2020) and compared this to the mean percent of fills delivered by mail post-COVID-19 (March 2020–September 2020) for each race/ethnicity group. We then compared the mean difference, absolute and relative, between the pre- and post- periods and conducted *t* tests to compare differences between race/ethnic groups, with non-Hispanic White race treated as the reference group for each race group comparison.

A total of 36,871 KPNC patients in the original EMPOWER trial with complete data (i.e., any prescription fill in both the pre- and post- period) were included in the current analyses; mean

age was 60.7 years, 47.55% were female, 26.01% were non-Hispanic White, 15.26% were Black, 31.56% were Hispanic, 1.88% were Native Hawaiian/Pacific Islander, 21.77% were Asian, 0.53% were Native American/Alaskan Native, and 2.98% had a missing value for race/ethnicity. On average, MOP use increased significantly from the pre- to the post- period (8.44% vs. 31.80%) (Fig. 1). We also found significant race/ethnic differences in MOP use. Black, Hispanic, and Hawaiian/Pacific Islander patients were significantly less likely to utilize MOP compared with White patients pre-COVID-19 to post-COVID-19, but all race/ethnic groups had higher relative mean increases in MOP use compared with White patients. Absolute and relative mean differences are presented, respectively: White 25.54%, 215.71%; Black 20.04%, 312.15% ( $P < 0.0001$ ); Hispanic 21.51%, 353.20% ( $P < 0.0001$ ); Hawaiian/Pacific Islander 20.33%, 311.33% ( $P < 0.0001$ ); Asian 26.12%, 290.22% ( $P = 0.250$ ); Native American/Alaskan Native 20.99%, 246.65% ( $P = 0.060$ ); race missing 23.55%, 269.76% ( $P = 0.056$ ).

We found that a policy change due to the COVID-19 shelter-in-place mandate was associated with a substantial increase in MOP use. This pattern aligns with the Centers for Disease Control guidelines that encourage MOP use to

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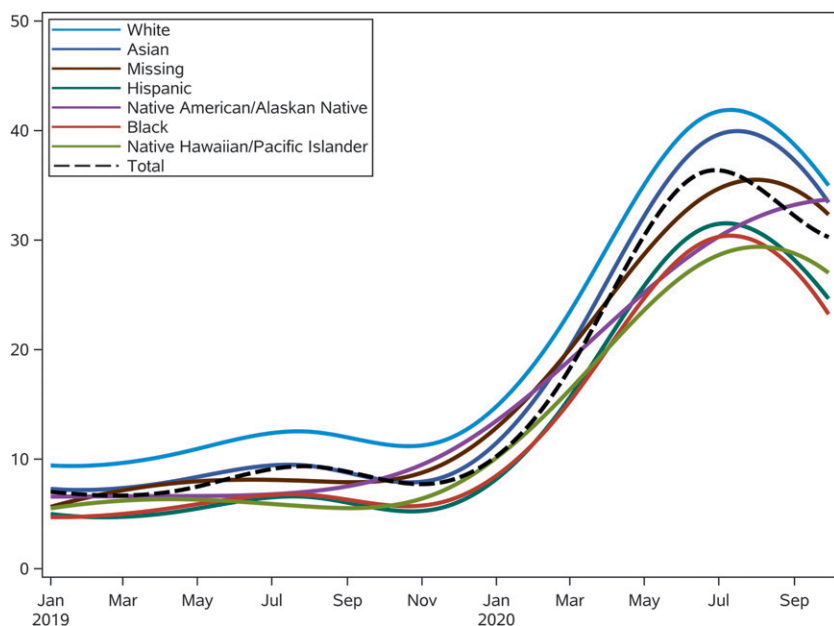
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**Figure 1**—Percentage of all prescriptions delivered via mail stratified by race/ethnicity, January 2019–September 2020.

promote medication adherence and reduce risk of SARS-CoV-2 infection for those at high risk for infection (e.g., patients with diabetes) during the pandemic (5). While all racial/ethnic groups demonstrated an increase in MOP use after the shelter-in-place mandate was enacted, Black, Hispanic, and Hawaiian/Pacific Islander patients were still less likely to utilize MOP than White patients. A sensitivity analysis using an interrupted time series approach to compare pre- and post- period slopes within each race/ethnic group showed similar results with all race/ethnic groups having smaller increases in slope compared with White patients, except Asian patients. Limitations to our study include lack of socioeconomic status data for cohort patients, missing race

data for almost 3% of our cohort, and the presence of COVID-19 in the news prior to the shelter-in-place mandate, which could have affected MOP use.

Research has shown marked health disparities in COVID-19 prevalence among racial and ethnic minorities, some of which is related to diabetes prevalence as well as differential access to care (4). Given MOP's demonstrated benefits for medication adherence (3) and the poorer adherence observed for some racial/ethnic minorities, there is a need to reduce barriers for racial/ethnic minorities that underuse MOP. Policy and health system changes can have a positive influence on MOP use, and future research should consider interventions/policy changes that support long-

term MOP use and medication adherence for racial/ethnic minorities.

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