

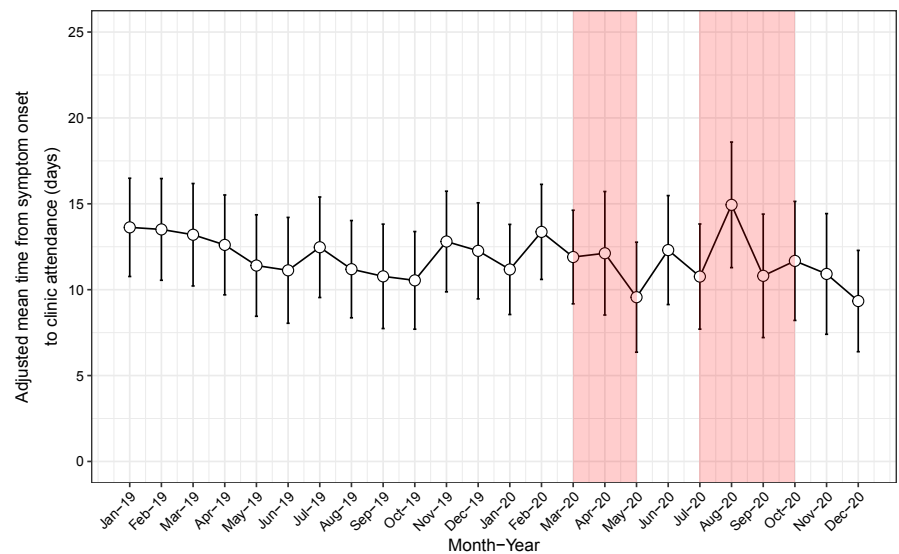
## Time to healthcare-seeking following the onset of STI-associated symptoms during two waves of the COVID-19 pandemic in Melbourne, Australia

Throughout 2020, countries worldwide introduced various restrictions and measures to control the COVID-19 pandemic. These restrictions were unprecedented and included limitations on social gatherings and reasons for leaving home.

Some studies reported a reduction in STI diagnoses and sexual activities during the COVID-19 pandemic.<sup>1–6</sup> Healthcare-seeking behaviour—how and when people seek healthcare—likely also changed due to COVID-19. Individuals may have delayed or forgone sexual health service attendance due to barriers such as fear of exposure to COVID-19 at healthcare clinics.<sup>7,8</sup> If this is the case, STI diagnoses may have been delayed or missed, leading to potential increased transmission and negative health sequelae.

Victoria is the only Australian state that underwent two significant lockdowns in 2020. The first lockdown occurred from late March to early May 2020, with restrictions on social gatherings, closure of non-essential businesses and a stay-at-home order. The second lockdown occurred in Melbourne from early July to late October 2020, with the strictest restrictions including a curfew from 20:00 to 05:00, limited daily outdoor exercise, mandatory face masks in public and allowance to travel no further than 5 km from one's home except where essential. Medical care remained accessible throughout.

The present study aimed to examine whether the COVID-19 pandemic affected time to healthcare-seeking among symptomatic clients at the Melbourne Sexual Health Centre (MSHC) in Victoria, Australia, between 2019 and 2020. MSHC is the largest public sexual health service in Victoria and remained open throughout COVID-19-associated lockdowns. Clients attending MSHC are asked to report whether they have symptoms and the duration of those symptoms (in days) using computer-assisted self-interviewing. We only included individuals with a diagnosis of the following: bacterial vaginosis, candidiasis, pelvic inflammatory disease, gonococcal urethritis, non-gonococcal urethritis, molluscum contagiosum,



**Figure 1** Time to healthcare-seeking following the onset of STI-associated symptoms at the Melbourne Sexual Health Centre in 2019 and 2020. The shaded regions indicate the first and second lockdowns, respectively.

proctitis, primary syphilis, secondary syphilis and genital herpes. Individuals with multiple diagnoses were excluded. The top 5% of the symptom duration were considered as outliers and were removed from this analysis. The adjusted mean and 95% CI of the monthly duration between symptom onset and clinic attendance were calculated from linear regression analysis using the generalised estimating equations with the exchangeable correlation structure, and data were clustered by diagnosis. All analyses were conducted in Stata (V.17; StataCorp, College Station, TX, USA).

Overall, there were 2824 clients (1535 in 2019 and 1289 in 2020) who reported duration of symptoms and were included in this analysis. **Figure 1** shows that the adjusted mean time to healthcare-seeking following symptom onset varied from 9 to 15 days, but there was no significant change over time ( $p=0.069$ ). The two lockdowns which occurred in March–May and July–October 2020 did not affect the time to healthcare-seeking compared with the same periods in 2019.

There have been very limited studies examining the duration of healthcare-seeking in relation to STIs during the COVID-19 pandemic. Our findings build on those of Chow *et al.*,<sup>6</sup> who found that Melbourne's first lockdown was not associated with a change in time to healthcare-seeking at MSHC compared with the 7-week periods immediately prelockdown and postlockdown. In the present study, we further identified no change in time to healthcare-seeking in 2020 compared with 2019, nor in relation to Melbourne's

second lockdown with more stringent restrictions. As such, there was no evidence of increased delay in healthcare-seeking among individuals with STI-associated symptoms attending a sexual health clinic during COVID-19. This is an important finding because timely diagnosis and treatment are key in preventing ongoing STI transmission and negative health sequelae.

Our study has several limitations. First, it was conducted at a single sexual health clinic, and our findings may not be generalisable to other settings. Second, recall bias regarding the self-reported duration of symptoms may have occurred. Third, most STIs are asymptomatic. Previous studies have found reductions in asymptomatic STI screening during COVID-19<sup>6,9</sup>; however, it is difficult to distinguish whether this was due to reduced sexual risk or change to healthcare-seeking.

While our results show that time to healthcare-seeking did not change significantly in 2020, changes in healthcare-seeking behaviour may still have occurred due to COVID-19. These changes may include a complete avoidance of healthcare services and delay in screening when asymptomatic. Further research is required into these areas, and encouragement of healthcare-seeking in the context of STIs remains crucial throughout the pandemic.

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