



## The widespread of asymptomatic SARS-CoV-2 infection indicates COVID-19's quiet spread.

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### ABSTRACT

Since its onset, the COVID-19 pandemic has resulted in nearly 92 million illnesses and 1.9 million fatalities globally. To stop the spread of the disease, public health efforts have centered on identifying sick patients. A growing body of evidence suggests that asymptomatic people are contagious and contributing to the worldwide epidemic. The National COVID-19 Database in Bahrain was used to examine symptoms, infectivity rate, and PCR Cycle threshold (Ct) values of 320 index cases and associated 1289 positive contacts.

**Keywords:** Covid-19, public health, asymptomatic people, infectivity rate

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### INTRODUCTION

Since its outbreak in December 2019, SARS-CoV-2, the virus that causes Coronavirus disease 2019 (COVID-19), has infected over 92 million people worldwide and killed over 1.9 million people (WHO, 2020). From asymptomatic illness to fever, cough, shortness of breath, and loss of taste and smell, the disease can appear in a variety of ways. Symptoms often present 2–14 days after virus exposure and can range from mild upper respiratory tract infections to severe pneumonia, which can lead to acute respiratory distress, shock, multi organ failure, and death. The virus is assumed to be spread mostly through person-to-person contact, with indications that SARS-CoV-2 is spread by inhaling large droplets exhaled by infected people. In order to stop the disease from spreading further, measures have been implemented to identify, test, and isolate sick people. International testing has primarily been done on symptomatic individuals seeking a diagnosis to date. While evidence of asymptomatic infections has grown, testing has been targeted for the more “pressing” symptomatic individuals. This is not surprising, given that early in the pandemic, COVID-19 detection was highly reliant on symptomatic diagnosis, and symptom control is an important aspect of treatment. The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have both produced recommendations for detecting COVID-19 based on symptoms. The WHO stated that transmission of COVID-19 by asymptomatic patients is “extremely rare”, which has now been withdrawn, in keeping with the conventional assumption that viral infection generally causes a symptomatic response in its host. According to the CDC, 35% of COVID-19 cases are asymptomatic, and 40% of transmissions happen before symptoms appear (CDC, 2020). Reports showed that transmission between asymptomatic index cases and contact cases generally occurred within families or during hospital visits, corroborating these claims.

The demographics (gender, age group, and nationality) of index and positive cases were compared. Differences in variables expressed as counts and/or proportions (gender, nationality, clinical characteristics) between samples were compared using Z-tests. To compare means between samples, T-tests with Welch's correction were performed, with mean values provided as (mean SEM) unless otherwise noted. At  $p < 0.05$ , p-values were judged statistically significant. STATA and Graph Pad Prism were used to conduct the analyses. The National COVID-19 Research Committee reviewed and approved the protocol and manuscript for this study. The National COVID-19 Research and Ethics Committee approved all techniques and retrospective data analysis, which were carried out in compliance with local rules and the Declaration of Helsinki 1975's ethical guidelines.

### CONCLUSION

The proportions of symptomatic ( $n = 160$ ; 50.0 percent) and asymptomatic index cases ( $n = 160$ ; 50.0 percent) were not significantly different ( $p = 1.0$ ); however, SARS-CoV-2 positive contact patients were mostly asymptomatic ( $n = 1127$ , 87.4%). Positive contact cases (20.8 %) were more common among people aged 0-19 years than index cases (4.7 %;  $p < 0.001$ ). A total of 22% of the positive contacts were infected by symptomatic male index cases between the ages of 30 and 39. Between symptomatic and

asymptomatic index cases, the total number of exposed contacts ( $p = 0.33$ ), infected contacts ( $p = 0.81$ ), and thus infectivity rate ( $p = 0.72$ ) were not different. Asymptomatic index cases had higher PCR Ct values than symptomatic index cases ( $p = 0.001$ ), and asymptomatic positive contacts had higher PCR Ct values than symptomatic positive contacts ( $p = 0.001$ ). There were no differences in the infectivity rates of index cases with Ct values of 30 and values of 30 ( $p = 0.13$ ). The high asymptomatic incidence of SARS-CoV-2 infection in Bahrain, as well as subsequent positive contacts from an index case, highlight the significant “silent” risk of transmission and the necessity for extensive screening for each positive infection to help prevent the ongoing epidemic.