DOI: 10.34172/mejdd.2021.206

The Seroprevalence of COVID-19 in Intravenous Drug Users in Comparison to Non-drug Users

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Received: 09 Aug. 2020
Accepted: 02 Dec. 2020

ABSTRACT

BACKGROUND

COVID-19 infection has led to a worldwide pandemic, and new cases are on the rise. Intravenous drug users (IVDU) are presumably at a higher risk of being infected since they have poor personal hygiene, live in groups, and have risky behaviors. The current study aimed to evaluate the seroprevalence of COVID-19 in IVDU in comparison with non-drug users (N-DU).

METHODS

This cross-sectional study was conducted on 167 IVDU and 134 N-DU. A questionnaire gathering data on demographics, comorbidities, and use of personal protective equipment was administered to all participants. In addition, 5 cc of blood was taken from each individual to test for SARS-CoV-2 specific antibodies (Pishtaz Teb SARS-Cov-2 ELISA kits).

RESULTS

The mean age of N-DU and IVDU were 38.9 ± 12.9 and 40.38 ± 10.24 years, respectively. COVID-19 seroprevalence in IVDU was 9.7%, and 4.8% in N-DU, but this finding was not statistically significant ($p = 0.096$).

CONCLUSION

While the seroprevalence of COVID-19 was not significantly different among the two groups, IVDU should still be considered by policymakers as a high-risk group due to their lifestyle and risky behaviors. Providing personal protective equipment and other means of protection and treatment to this population can help mitigate the spread of and mortality from COVID-19.

KEYWORDS:
Seroprevalence, COVID-19, IV drug users

Please cite this paper as:
Mohammadi Z, Eghtesad S, Hashemi-Shahri SM, Tabatabaei SM, Sharafkhah M, Poustchi H. The Seroprevalence of COVID-19 in Intravenous Drug Users in Comparison to Non-drug Users. *Middle East J Dig Dis* 2021;**13**:67-70. doi: 10.34172/mejdd.2021.206.

INTRODUCTION

The COVID-19 infection, caused by a novel coronavirus originating from Wuhan, China, in December 2019, has led to a worldwide pandemic, and new cases are still on the rise.[1,2] Studies have shown that infection rates and mortality are higher in certain at-risk populations, including individuals older than 60 years, those with co-morbidities such as cardiovascular diseases and diabetes, as well as individuals who are exposed to higher virus loads due to the nature of their job.[3-8] People who abuse intravenous drugs (IVDU) are presumably at

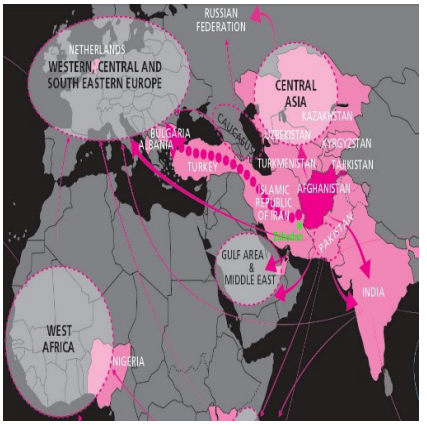

Fig.1: Zahedan city, the capital of Sistan and Balouchestan province (starred on map), plays a key role in the heroin transit routes through Iran due to its close proximity to Afghanistan and Pakistan. Image Source: UNODC, World Drug Report 2018; based on responses to the annual report questionnaires and individual drug seizure databases.[22]

a higher risk of COVID-19 infection since they are often homeless and live in grouped shelters and with low personal-hygiene and self-care. In addition, they have less access to health services in comparison to other populations.[9-10]

Besides poor living conditions, infectious and non-communicable diseases are also common in IVDU, affecting their risk of COVID-19 infection. The prevalence of blood-borne diseases such as HIV, hepatitis B, and C is high in IVDU given their risky behaviors such as needle sharing and unprotected sexual contact. In addition, the prevalence of non-communicable diseases and comorbidities is also high in this population, especially chronic pain, cancers, cardiovascular diseases, and respiratory diseases.[11-15]

Given the special conditions surrounding IVDU, the aim of this report is to investigate COVID-19 seroprevalence in IVDU in comparison with non-drug users (N-DU).

MATERIALS AND METHODS

Sistan and Balouchestan province is located in the southeast of Iran. This province neighbors Afghanistan and Pakistan on one side and is the key in the heroin transit route to other parts of the world (figure 1). This province has one of the highest rates of drug use in Iran, in both males and females (male = 30.1-52.0, female = 5.1-10.0).[16] In this report, COVID-19 seroprevalence in IVDU of Zahedan, the largest city and capital of Sistan & Balouchestan province, was compared to that of N-DUs. This study was approved by the Ethics Committee of Tehran University of Medical Sciences, Tehran, Iran (IR. TUMS.VCR.REC.1399.308).

Male IVDU were randomly recruited through a drop-in center in Zahedan, as well as a mobile van that distributes food and clean syringes to homeless drug abusers throughout the city. The population census at Zahedan Health Centers was used to randomly select and recruit N-DU for comparison. Given that all IVDU were male, only male N-DU were selected to be included in this study.

A questionnaire was completed for individuals in both groups regarding demographic information and the presence of comorbidities, as well as the use of personal protective equipment during the pandemic. In addition, 5 cc of blood was taken from each individual, and serum levels of SARS-CoV-2-specific immunoglobulin G (IgG) and immunoglobulin M (IgM) antibodies were assessed (Pishtaz Teb SARS-CoV-2 ELISA kits, Tehran, Iran).[17]

RESULTS

This cross-sectional study was conducted in July 2020, enrolling 167 IVDU and 134 N-DU. The average ages of the participants were 38.9 ± 12.9 and 40.38 ± 10.24 years in the N-DU and IVDU, respectively. Body mass index was significantly higher in the N-DU (p = 0.000). The presence of co-morbidities was not significantly different between the two groups.

COVID-19 seroprevalence in IVDU was 9.7%, and 4.8% in the N-DU, but this finding was not statistically significant (p = 0.096). Masks were used by 81.4% of N-DU and 18.6% of IVDA (p = 0.000). N-DU were eight times more likely to be in contact with COVID-19 patients than IVDU (p = 0.000). Approximately 1.2% of N-DU and 0.7% of IVDU were hospitalized following COVID-19 infection.

DISCUSSION

AThis study found that COVID-19 seroprevalence was 1.5 times higher in IVDU, although this difference was not statistically significant. Other studies have discussed the risk of COVID-19 in individuals with substance use.[18-20] A study conducted using electronic health records in the United States found that the risk of COVID-19 was significantly higher in patients with substance use in the year prior to infection.[20] While previous studies

had evaluated COVID-19 in substance users, this study examined the seroprevalence of COVID-19 for the first time, in IVDU.

The lifestyle of IVDU is different from many other groups in society. Many IVDU in Iran are homeless, live in groups, have low personal hygiene, and share personal belongings, especially needles. They are also at a higher risk of many comorbidities, all of which places them at a higher risk of COVID-19 infection as well. In addition, experiences from previous outbreaks have shown that IVDU are more vulnerable to diseases such as hepatitis A, tuberculosis, and invasive group A streptococcus.[21]

Therefore, special attention should therefore, be given to them by policymakers as a high-risk group. Farhoudian et al. suggest various strategies to reduce COVID-19 infection and mortality in drug users. Among them, screening for COVID-19 infection, providing and promoting the use of personal protective equipment, and making treatments available for those infected are the most important approaches that need to be taken.[10]

CONCLUSION

This report showed that the seroprevalence of COVID-19 was higher in IVDU, in comparison with N-DU, but this difference was not statistically significant. Nonetheless, special attention needs to be paid to this at-risk population due to their higher vulnerability and risky lifestyle.

ACKNOWLEDGEMENT

We are thankful to the participants for their contribution.

Authorship

ZM and HP designed, supervised the project, and drafted the paper. SE, SMHS, and SMT contributed to data collection and co-wrote the manuscript, MS analyzed the data.

Funding

This work was funded by the National Institute for Medical Research Development (NIMAD) [grant number 996583].

CONFLICT OF INTEREST

The authors declare no conflict of interest related to this work.

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