

Analyzing COVID-19 Rates Between Residents and Staff in Correctional Facilities: A Telemedicine Opportunity

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Abstract. To evaluate the relationship of COVID-19 infection rates between residents and staff members in prison facilities. We collected historical data on daily COVID-19 counts for California, Florida, and Wisconsin residents and staff. We analyzed 78,250 COVID-19 cases among residents and 25,392 cases among staff. Strong positive associations were found in the rates of COVID-19 cases between residents and staff, suggesting telemedicine can help reduce outbreaks.

Keywords. COVID-19, Clusters, Prison, Staff, Residents, Telemedicine

1. Introduction

Telemedicine was well-received by patients and providers in prisons during the pandemic [1]. COVID-19 rates in prisons were much higher than in the general population, and it's possible that visitors and staff contributed to the spread [2]. Telemedicine could reduce non-essential visits and limit infections. We need to understand more about the relationship between residents and prison staff to prevent future outbreaks, and telemedicine can help provide medical care. We evaluated the association of COVID-19-confirmed cases between residents and staff in prison facilities.

2. Methods

We obtained data from the UCLA Behind Bars project on 123 California, Florida, and Wisconsin prison facilities [3]. We collected COVID-19 data from three states using UCLA Behind Bars, including daily counts of cases and deaths among residents, staff, and the prison population and address. Using Pearson correlation, we tested the association of cases between residents and staff. The significance of the association was determined by calculating the rate for each state using an alpha of 0.05. R-Studio was used to run the Pearson correlation tests, the p-value, and the confidence interval. The relative risk (RR) of contracting COVID-19 was calculated by dividing the RR contracting in all state prisons divided by the risk of contracting within the same state.

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3. Results

As of January 2021, there were over 400,000 COVID-19 cases reported among US prison residents and staff, with California, Florida, and Wisconsin having the highest numbers. A strong positive association was found in the rates of COVID-19 cases between residents and staff in California ($r:0.73$; $p\text{-value}<0.01$; 95% CI: 0.72-0.74), Table 1. Florida (58) had the highest number of COVID-19 clusters followed by California (38) and Wisconsin (35).

Table 1. Risk of Contracting COVID-19 in Prison vs the General State Population 3/31/2021 - 1/6/2021

Geographic Location	The U.S.	California	Wisconsin	Florida
Number of Prison Facilities	1,719	36	37	50
Risk of Contracting COVID-19 in Prison	27.1%	43.1%	45.6%	21.6%
Relative Risk of Contracting COVID-19 in Prison vs Statewide	4.1	6.6	4.9	3.3
Pearson Correlation of cases between Prisoners and Staff, r^2 ($p\text{-value}$)	N/A	0.73 (<0.01)	0.57 (<0.01)	0.56 (<0.01)

The first documented COVID-19 cases were a prison staff member in 83.7% of all reported outbreaks in the three states, Figure 1.

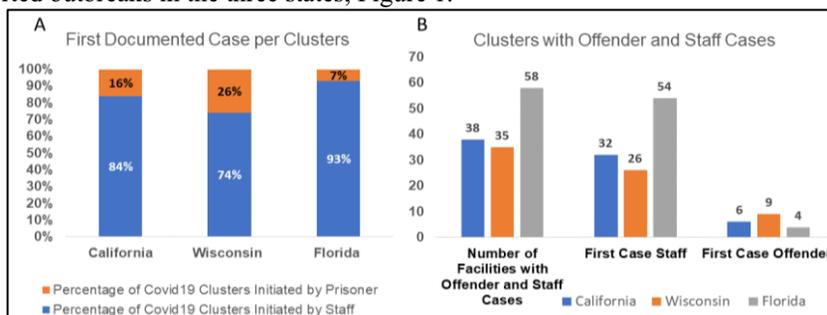


Figure 1. Association between COVID-19 Clusters and First Case among residents and staff officers.

4. Discussion

We found a strong link between COVID-19 rates among prisoners and staff in prisons across three states. The first case in most clusters was traced to staff members, highlighting the risk of infection from them. COVID-19 clusters occurred in prison facilities with high rates of overcrowding. Telemedicine can help reduce overcrowding by limiting the number of visitors, such as medical providers, which in return will reduce the likelihood of prisoners' exposure to the virus. The study had limitations due to lack of information on safety policies for staff and population demographics of each prison.

References

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