

## **Smart Methods to Deal with COVID-19 at University-Level Institutions Using Social Network Analysis Techniques**

### **ABSTRACT**

The current global health crisis is a consequence of the pandemic caused by COVID-19. It has impacted the lives of people from all factions of society. The re-emergence of new variants is threatening the world, which urges the development of new methods to prevent rapid spread. Places with more extensive social dealings, such as offices, organizations, and educational institutes, have a greater tendency to escalate the viral spread. This research focuses on developing a strategy to find out the key transmitters of the virus, particularly at educational institutes. The reason for considering educational institutions is the severity of the educational needs and the high risk of rapid spread. Educational institutions offer an environment where students come from different regions and communicate with each other at close distances. To slow down the virus's spread rate, a method is proposed in this paper that differs from vaccinating the entire population or complete lockdown. In the present research, we identified a few key spreaders, which can be isolated and can slow down the transmission rate of the contagion. The present study creates a student communication network, and virus transmission is modeled over the predicted network. Using student-to-student communication data, three distinct networks are generated to analyze the roles of nodes responsible for the spread of this contagion. Intra-class and inter-class networks are generated, and the contagion spread was observed on them. Using social network strategies, we can decrease the maximum number of infections from 200 to 70 individuals, with contagion lasting in the network for 60 days.