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Anna D. Tulen[1,2], Gini G.C. van Rijckevorsel[1], Alvin A. Bartels[1], Mirjam J. Knol[1], Margreet J.M. te Wierik[1], Susan van den Hof[1], Susan J.M. Hahné[1]

1) Centre for Infectious Disease Control Netherlands, National Institute for Public Health and the Environment (RIVM), Bilthoven, the Netherlands

2) European Programme for Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden

COVID-19 clusters outside healthcare institutions and households during the initial phase of the pandemic: A literature and media review

Introduction

During the initial phase of the COVID-19 pandemic, based on the available knowledge at that time infection control measures outside hospitals were put in place to prevent droplet and indirect transmission. However transmission may occur through multiple routes in various settings. Outbreaks of COVID-19 related to specific indoor activities (e.g. singing and physical exercise) during the initial phase of the pandemic can give insight into risk factors for SARS-CoV-2 transmission and possible aerogenic transmission.

Methods

We retrospectively collected information on reported COVID-19 clusters that were related to specific indoor activities in the Netherlands and in other countries, from January up to May 24, 2020. Healthcare institutions and household clusters were not included. Clusters were stratified based on type of specific indoor activity and for each type of activity we compared frequency of occurrence, cluster sizes and attack rates.

Results

In total 12 clusters in scientific literature, and 34 clusters in media reports were found. The clusters were related to choirs and orchestras, religious gatherings, indoor sports activities and other indoor meetings and gatherings. Choirs were most frequently mentioned (n=11 clusters), for 6 clusters with reported attack rate, the range was 11%-87% and cluster size ranged between 10 and 102 cases.

Discussion

Participating in choir singing was identified as a possible risk factor for increased SARS-CoV-2 transmission. Although droplet or indirect transmission have occurred at these occasions, possible aerogenic transmission over longer distances than 1.5 meters may have contributed to the remarkably high attack rates. In future outbreaks additional phylogenetic research is recommended to assist in clarifying transmission patterns. This knowledge is of importance for policy-making and applying tailored control measures.

Keywords: COVID-19, SARS-CoV-2, outbreaks, review

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