

The Diagnostic Evaluation of Clinical Symptoms and Signs for COVID-19 in hospitalized patients of Northern Iran

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Abstract

Background: A novel coronavirus, led to a rapidly spreading outbreak of COVID-19 which caused morbidity and mortality worldwide. Appropriate case definitions can help in diagnosing COVID-19. The aim of this study was to evaluate the existing and potential syndromic case definitions of COVID-19 using latent class analyses (LCA) among hospitalized patients of North Iran. **Methods.** The data of this cross-sectional study was collected from hospitalized patients tested for COVID-19 by RT-PCR between February 20 and August 20, 2020. The sensitivity, specificity, positive, and negative predictive values, and the area under the ROC curve (AUC) of each syndromic pattern (standard case definitions and alternative case definition patterns from Latent Class Analysis (LCA)) were compared and plotted. **Results.** Among 7,784 hospitalized patients tested for COVID-19 and included in the analyses, 2,233 (28, 7%) had RT-PCR confirmed COVID-19. The symptoms of fever & chills, cough, breathing difficulty, myalgia, sore throat, headache; and the signs of body temperature >37.8, pharyngeal exudate, and abnormal chest radiography were informative in all syndromic patterns. Among latent classes, symptom-class 3 that was comprised of fever & chills, cough, and breathing difficulty had the greatest AUC. While, among standard syndromic patterns, the WHO-acute respiratory infection (ARI), suspected-COVID-19 and probable-COVID-19 definitions had the greatest sensitivity and AUC. **Conclusion.** The WHO ARI, suspected-COVID-19, and probable-COVID-19 patterns were the most sensitive for detecting COVID-19 infection among hospitalized patients. However, alternative syndromic patterns can be used in case high specificity is required.

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