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Investigating collective actions and mental health on social media during the 2019 anti-government social unrest in Hong Kong

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Background: Modern data science research utilizes text mining techniques for analyzing social media content on mental health issues and collective actions. Using the social media content that was related to the 2019 anti-government social unrest in Hong Kong, current study revealed the associations between collective actions and mental health.

Methods: Users-generated comments on online forums (e.g. Baby-Kingdom Forum, Discuss.com.hk, Hong Kong Golden Forum, and LIHKG Forum) and social networking sites (e.g. Twitter) from June to November 2019 were obtained. For text mining the obtained comments, a Cantonese term-list was created to identify terminologies related to collective actions (e.g. street protest and propaganda) and mental health (e.g. sleep, stress, and mood symptoms). The frequencies of comments containing the currently interested terminologies were used to create time series data frames and were analyzed using autoregressive integrated moving average with explanatory variable (ARIMAX). Adjustments for the data frames were made for addressing the seasonality and the stationarity.

Findings: A total of 3,572,665 social media comments was identified in the 183 days of investigation period, in which offline protests occurred on 75 days. ARIMAX results showed that the frequency of comments containing collective action terms was relatively higher on days with offline protests than on days without. The frequency of comments containing both collective action- and mental health-terms was also relatively higher on days with offline protests than on days without.

Implications: Current results suggest a positive association between offline protest activities and online social media content. Text mining the social media content may help identify the mental health needs deriving from social unrest.

Ongoing study: Study 2 has been conducting by using the social media content and the government data, and aims to reveal the associations among the frequencies of (1) police arms (e.g. tear gas and bullets), (2) collective actions, and (3) mental health. Implications for public policy and coping strategies for mental health will be discussed.

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