COVID-19 Social Distancing and Online Mutual Help Engagement for Alcohol Use Recovery

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Introduction: COVID-19 and associated social distancing has presented challenges for individuals engaging in face-to-face mutual help groups (MHGs) such as Alcoholics Anonymous for alcohol use recovery. Online MHGs may be particularly appealing to individuals with limited access or inclination to attend in-person MHGs. We examined engagement within the popular ''StopDrinking'' online MHG, hypothesizing that engagement would increase due to demand for virtual peer support as COVID-19 social distancing progressed.

Methods: We collected publicly available engagement data for StopDrinking from February 19, 2018 through April 30, 2020 while considering March and April of 2020 as months initially impacted by voluntary or mandated COVID-19 social distancing. Using seasonal autoregressive integrated moving average models, we predicted daily engagement for this social distancing time period based on all available engagement data collected before April 2020. Kalman filtering with 95% prediction limits was employed to define significant thresholds for observed data to reside within.

Results: All days of observed engagement in March and April 2020 were lower than corresponding predicted values. Observed engagement fell below the lower 95% prediction limit for 36% of days, with 15 days in March and 7 days in April having significantly lower than predicted engagement.

Conclusions: Relatively low activity on StopDrinking may signal broader population trends of problematic alcohol use and recovery disengagement during the initial COVID-19 social distancing timeframe. Continued investigation of online MHGs is needed to understand their potential for monitoring population health trends and to understand how such groups might support alcohol use recovery in contexts of crisis and isolation.

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COVID-19 and associated social distancing has had profound social and psychological impacts on day-to-day life. These impacts are particularly challenging for individuals who are recovering from alcohol or other substance use disorders as social distancing has restricted participation in face-to-face mutual help groups (MHGs) such as Alcoholics Anonymous (AA).[1] This lack of accessibility is particularly concerning as MHGs are a primary way that individuals actively engage in recovery activities; even more commonly than via formal treatment.[2]

In recent years, online MHGs have proliferated and may be particularly appealing to individuals during times of limited access to in-person MHGs.[3,4] However, little is known about their effectiveness in supporting recovery outcomes,[5] or potency of online MHGs as directly compared with in-person MHGs, mobile recovery apps, and the use of multiple modalities together.[6] In the context of COVID-19, there is an opportunity to understand how online MHGs are engaged with during times of social distancing and crisis, whereas in-person MHGs have reduced operations. To directly address this issue, we examined engagement within the peer-moderated ''StopDrinking'' MHG which was covered in the *Washington Post* as ''the surprising Internet forum some alcoholics are choosing over AA'' when it had 30,000 subscribers in 2016.[7] It has since grown to approximately 256,000 subscribers and is a leading peer recovery community on the Reddit social media platform.[8] Given the notoriety and popularity of this online MHG, as well as barriers to accessing in-person MHGs during COVID-19 social distancing, we sought to examine overall engagement on StopDrinking during this timeframe. Specifically, we hypothesized that engagement on StopDrinking would increase due to demand for online support as initial COVID-19 social distancing occurred and access to in-person support was more limited.

METHODS

In the course of ongoing research approved by the University of Pittsburgh Institutional Review Board, we collected publicly available StopDrinking user engagement data via the Reddit Application Programming Interface. These data

included all newly appearing posts that were user-generated as well as those that were community-sponsored (eg, ''daily check-in''). These posts and all associated responses (ie, comment threads) were obtained from Feruary 19, 2018 through April 30, 2020. We considered March and April of 2020 as months initially impacted by voluntary or mandated COVID-19 social distancing. Using multiplicative seasonal autoregressive integrated moving average (ARIMA) models, we predicted daily engagement for this period using the training set of all available data before March 1, 2020. We inspected the autocorrelation function and partial-autocorrelation function of the training series and determined that an ARIMA (0,1,1) model with 7-day period captured seasonal behavior, whereas an ARIMA (1,0,2) model fit nonseasonal fluctuations. Our final model was ARIMA $(1,0,2)x(0,1,1)_7$. All model parameters were significant and residuals revealed no autocorrelation or heteroskedasticity. We forecasted the series 61 days out (March 1, 2020 through April 30, 2020) with 95% prediction limits (± 2 prediction error bounds) using Kalman filtering.[9] Observed engagement data were superimposed, and we determined the number of days in the actual engagement series that fell outside the prediction limits. Analyses were performed in R version 3.6.3 with the *astsa* package.[10,11]

RESULTS

Overall, we observed a mean of 18,575 engagements per week ($SD = 1998$) with the lowest weekly engagement value of 13,267 (-2.7 *SD*) in late-March 2020 (Fig. 1). No observed days of engagement in March and April 2020 were above corresponding predicted values (Fig. 2). For 36% of days (15 days in March and 7 days in April), observed engagement fell below the model-based lower 95% prediction limit (Fig. 2).

DISCUSSION

Contrary to our hypothesis, engagement with the StopDrinking MHG was significantly lower during the early weeks of the COVID-19 social distancing timeframe. After the first week of April, engagement appeared to trend toward presocial distancing levels. Potential explanations for the decreased level of engagement include competing demands (eg, child care, employment changes), displacement by other support modalities (eg, AA or other MHGs that transitioned to online video meetings), and overall increases in problematic alcohol use. Given stressful circumstances experienced during COVID-19 social distancing, as well as social isolation itself being a risk factor for problematic alcohol use, it is probable that ''a spike in alcohol misuse, relapse, and potentially development of alcohol use disorder in high-risk individuals'' underlies our observed trends during this time.[12] Further evidence indicates that COVID-19-related stress is associated with increased alcohol use in the US, and that women and individuals with children at home are at heightened risk.[13] Significant increases in quantity and frequency of alcohol use have also been found among university students—particularly those lacking perceived social support or experiencing symptoms of depression and anxiety—following campus closure due to COVID-19.[14] Thus, it is plausible that observed trends from StopDrinking may reflect broader disengagement from recovery-related activities among high-risk individuals who are experiencing emergence or resurgence of problematic alcohol use patterns. Qualitative studies of online MHG content would be helpful to contextualize the quantitative trends that we observed during this time period.

As our findings are limited to a single online MHG, they should be confirmed with corroborating data from other sources. Additionally, as we had access only to recently active posts and responses on the main StopDrinking forum, we were

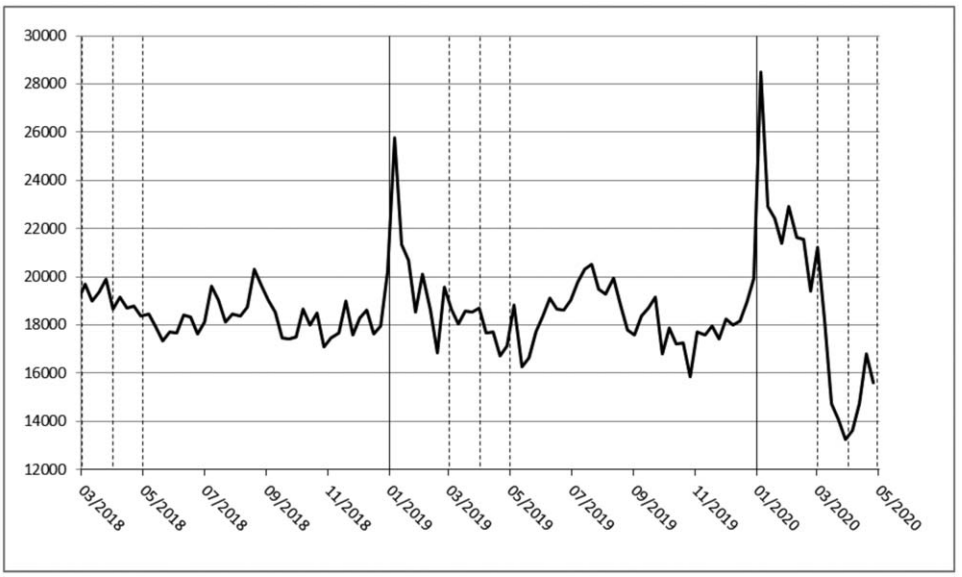

FIGURE 1. Engagements per week on StopDrinking from March 1, 2018 through April 30, 2020. Dashed lines accentuate the months of March and April for visual comparison across years.

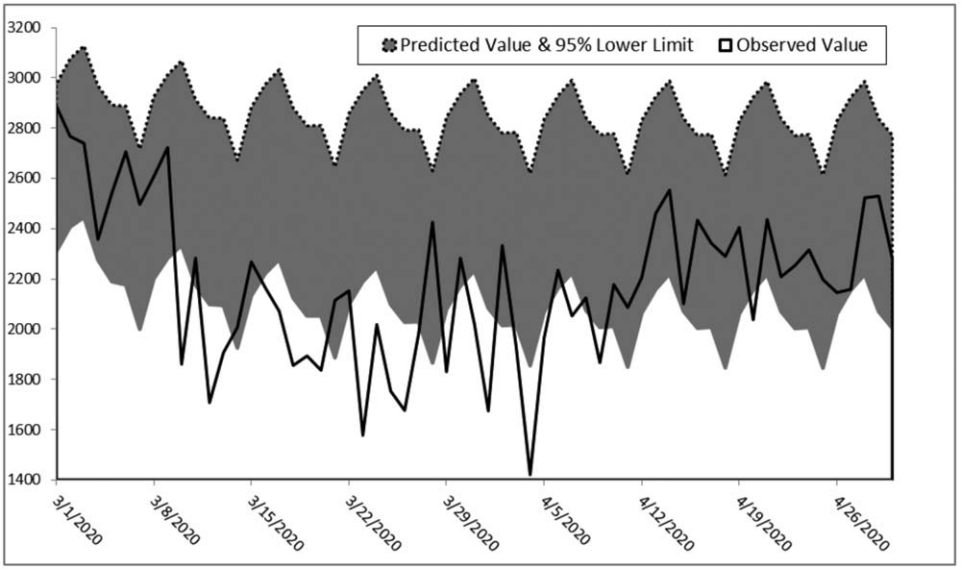

FIGURE 2. Predicted and observed daily engagement for March 1, 2020 through April 30, 2020.

unable to detect engagement with other localized forums (eg, StopDrinking London), older posts that might include additional resources (eg, book recommendations), or aspects of this MHG that are not germane to the forum itself (eg, external chatroom). Nonetheless, as we were able to consistently and systematically capture StopDrinking engagement data for more than 2 years, the significant decrease corresponding to initial COVID-19 social distancing is noteworthy. This provides novel evidence to inform public health concerns about alcohol use trajectories during this time. Further, this illustrates a potential opportunity to leverage publicly available MHG engagement data to monitor population health trends that may impact addiction medicine practice. Future studies might also include website access metrics to detect the presence of ''lurkers'' (ie, individuals who read but do not actively engage), as these metrics were not available using the data collection methods that we employed.

Despite the decreased engagement observed on StopDrinking during initial social distancing, we anticipate that use of online MHGs will continue to be relevant for individuals seeking alcohol recovery resources. To determine which online MHGs might be best recommended to patients, it will be important to assess the effectiveness of such platforms for supporting recovery and compare them among face-to-face, video, mobile recovery apps, and use of multiple modalities.[6] Continued investigation is warranted into these complex patterns of MHG engagement—particularly in contexts of crisis and isolation—to inform understandings around the dynamic social landscape and potential role of online MHGs in alcohol use recovery.

CONCLUSIONS

Engagement with the online StopDrinking MHG was significantly lower during the initial COVID-19 social distancing timeframe as compared to the previous 2 years. This may reaffirm emerging concerns about intensified or unmitigated alcohol use problems among at-risk individuals during this time of widespread social isolation and crisis. Continued investigation is warranted into co-use of online and in-person MHGs and the extent to which use of online MHGs may enhance rather than displace in-person MHG engagement. Additionally, the practical utility of online MHGs should be further assessed to inform evidence-based recommendations for individuals who are unable or unwilling to engage with in-person MHGs for recovery support.

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