

ALCOHOLISM: A MATHEMATICAL MODEL WITH MEDIA AWARENESS CAMPAIGNS

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Communicated by Jonathan Brown

ABSTRACT. In this paper, we study how media awareness campaigns influence the spread and persistence of drinking behavior in a community. Here, we present a compartmental population model with an additional differential equation to describe the dynamics of media awareness campaigns in combating problem drinking. Our model indicates a basic reproductive number, R_0 , where there exists an asymptotically stable drinking-free equilibrium if $R_0 < 1$, and a unique endemic state, which appears to be stable when $R_0 > 1$. We found that the following two components affect the basic reproductive number: the strength of peer influence of problem drinkers on susceptibles and the average overall time spent in the problem drinking environment. Furthermore, we conclude that the existence of media awareness programs and effective treatment options does not eliminate a drinking culture in the community, it only temporarily alleviate the issue. To support our findings, we present analytical and numerical approaches.

KEYWORDS: *Alcoholism, Media Campaigns, SIR dynamics*

MSC (2010): Primary 91D10

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Received December 27, 2017; revised March 11, 2018.