Using Online Social Support to Predict Cancer Stage

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Abstract
Cancer is one of the widely studied chronic disease in the domain of online social support as well as healthcare. Online communities offer the opportunities to patients with chronic diseases to learn more about their current condition and seek different kind of online social support. According to the Social Support Behavior Code (SSBC), social support includes informational, tangible, emotional, network, and esteem support. Automatically inferring the health status of a patient can be very useful to the patients themselves, researchers who study patients’ online behaviors, as well as health care providers.

Our objective in this work is to automatically predict patients’ cancer stage based on the type of support they seek in online communities. More specifically, we aim at using content analysis in order to build a prediction model to help in predicting cancer stage (Stage 0, Stage I, Stage II, Stage III, or Stage IV) based on the type or combination of types of social support (informational, tangible, emotional, network and esteem) patients seek.

In literature, most of the studies that tried to predict cancer stages followed the content analysis or network analysis approach. When it comes to network analysis, the focus was on patients’ connections with other patients in the online community. Based on these connections, researchers predict patients’ cancer stages based on other patients’ current cancer stages. So, the analysis was mainly focused on the structure of the network.

On the other hand, studies that employed content analysis were mainly focused on the disease itself. For example, content analysis was used to characterize patients’ cancer stage based on the information they provide about their current status using online communities, where these information has to do with the disease itself like size of the tumor and any other health related issues.

In our study, we believe that type of online social support that cancer patients’ received in online communities can help predict patients’ cancer stage. In other words, informational, tangible, emotional, network and esteem support can help predict patients’ cancer stage, whether it is Stage 0, Stage I, Stage II, Stage III, or Stage IV. For example, patients who seeks informational support are more likely to be Stage 0 as any patient with chronic disease seeks information about his disease the first time he/she knows that he/she has the condition. On the other hand, patients with Stage IV cancer level are more likely to seek some sort of emotional support as in this stage cancers have often metastasized, or spread to other organs or throughout the body, where it can be only treated by chemo, radiation, or surgery.

We aim at using content analysis in order to analyses the content of a cancer related online community. More specifically, we will analyze the content of patients’ threats and try to code these content with the appropriate type of support they are looking for. Also, using content analysis, we will also try to code the stage of the patients’ cancer. Based on our analysis, we will use the data to build a prediction model that can help predict cancer stage based on the type of social support that patients’ seeks.

We look forward to comments and feedback from the audience about how we can improve the work and ideas in terms of using the appropriate analysis technique.