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Mining Twitter data to #educate the public about #sepsis

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Introduction

Sepsis is not well known. Only 58% of Americans know the word sepsis, less than 1% can identify its symptoms and one-third wrongly believe the disease is contagious (1). What if social media educated users about sepsis? There are at least 500 million tweets worldwide per day on Twitter.

Objectives and Approach

Early detection of sepsis with early treatment is associated with a decrease in mortality (2). The current study aims to use Twitter to share sepsis patients' experiences. The approach consisted of using text data mining techniques by randomly extracting tweets (N =150) with the hashtag #sepsissurvivor (3) using R software (4). The study retrieved and quantified sepsis patients' tweets into word frequency distributions using documentation summarization and word cloud techniques (5) for visual representation of Twitter data. Sepsis patients used images symptoms cards (6) to raise awareness. The study used the R package "tesseract" to extract text from images (6).

Results

Patients sharing their experiences frequently used the word "sepsis." Cardiorespiratory compromise (septic shock—the highest mortality risk) was illustrated in the words "my heart stops" or elevated "heart" rate or "low blood pressure." Several studies have reported increased mortality associated with delays in antibiotic administration (7). Many sepsis survivors had antibiotics exposure, both in a timely manner or delayed in use. Sepsis patients experienced long stays in the hospital. Tweets mentioned "infection" 39 times (8), which supports patients' diagnoses in addition to high rates of "fever." The clustering technique using word association indicated infection was highly correlated with sepsis (9). Sepsis survivors shared the "pain" they went through.

Conclusion/Implications

Twitter presents an opportunity for patients to disseminate information about sepsis raising awareness about important symptoms. The information tweeted explores the impact of this diagnosis, and the need for early treatment. The current study demonstrates the opportunity to raise awareness through the learned experiences of patients in a novel medium.

