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Using Artificial Intelligence for Diabetes Distress Detection among the Facebook Community

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Abstract:

Diabetes distress is an emotional reaction experienced by patients and caregivers, and to-date; studies have mainly focused on surveys to gauge patients' distress levels. With the advent of social media and Artificial Intelligence, automatically detecting distress based on textual data is made possible. This paper aims to detect distress among the Facebook diabetes community using emotion analysis, linear regressions and dictionaries. Facebook posts were gathered from official diabetes pages resulting in a total of 2244 posts tagged with user reactions. The emotion analysis performance was found to be satisfactory, with the average scores for all the metrics between 65% and 82%. Three significant Facebook user reactions were observed, namely, anger (angry emotion), love and wow (fear) and wow and sad (sadness). The incorporation of these predictors was found to improve distress detection as the model outperformed the baseline, with an average accuracy of 76%.

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I. Introduction

Diabetes distress is a condition where the patients face an emotional burden such as stress, guilt and denial arised from living with diabetes and the burden of self-management. It often hidden when trying to manage the chronic disease that is affecting many worldwide. There are about 18-45% of diabetes patients exhibiting subdiabetes condition. Regularly, diabetes distress may result in patients, and also the caregivers to feel angry, demotivated, lonely, and thus affecting their mental well-being, relationships and life, among others. An example is when diabetes patients express their fear and anxiety when they need to administer their own insulin injections daily [2].

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