Challenges of Trustable AI and Added-Value on Health
B. Séroussi et al. (Eds.)

doi:10.3233/SHTI220412

Behavioral Segmentation for Enhanced Peer-to-Peer Patient Education

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Abstract. The aim of this study was to develop a peer-to-peer virtual intervention for patients with type 2 diabetes from different segments: patients who take several medications (medication group), patients who do not take diabetes medications (lifestyle group), and a mixed group. Preliminary results showed that patients in the lifestyle group were interested in preventive strategies, reporting better learning experience and higher motivation than those in the medication group. Future research is needed to design approaches tailored to patients in the medication group.

Keywords. behavioral segmentation, peer-to-peer support, type 2 diabetes

1. Background

Type 2 Diabetes (T2D) is a major challenge for health systems worldwide [1]. A minority of patients achieve good control of disease whereas the majority struggle to do so, despite having access to the same resources [2]-[4]. Not all patients have the same preferences when it comes to treatments of T2D. The aim of this study is to develop a new, scalable, data driven approach for patients with T2D in the form of peer-to-peer support in a virtual environment, based on patient segmentation on medication-taking behavior. Segmentation is widely used in marketing [5] but still largely unexplored in healthcare [6],[7] and it is usually not adopted for the provision of tailored interventions, despite growing evidence that it could support patient self-management [8],[9].

2. Pilot Experiment

Three peer-to-peer virtual workshops were performed (N=14 patients out of a dataset of 825 patients): medication group (patients taking anti-hypertensives, anti-cholesterol, 1st line, and 2nd line diabetes drugs); lifestyle group (patients not taking diabetes drugs), and

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a mixed group. Patients filled out surveys regarding attitudes, learning and motivation. The protocol was approved by the Ethics Boards at Queen's University Health Sciences & Affiliated Teaching Hospitals (Oct 5, 2020) and at Ryerson University (Mar 10, 2021).

The groups did not differ in terms of age and gender distribution, and the average values of biomarkers (glycated hemoglobin, low-density lipoprotein, systolic and diastolic blood pressure) were similar. All participants appreciated the value of being with other people with the same disease to share their stories, regardless of the patient segment and regardless of their level of control of disease. Differences were observed between groups in terms of self-reported learning and preferred topics (i.e., diet, exercise, and management of diabetes related symptoms in the mixed and lifestyle groups). In the mixed and lifestyle groups, patients identified specific practical solutions, they were satisfied with the format, and they were willing to recommend the workshop to others, whereas patients in the medication group were interested in managing the 'effects' of diabetes (symptoms, stress, mental health) rather than in preventive strategies.

Future research will be needed to develop approaches tailored to the needs of patients in the medication group (e.g., a discussion oriented to managing the effects of diabetes and improving medication adherence). The proposed approach is potentially scalable as it uses a fully virtual process, it does not require healthcare provider supervision, and is based on EMR data that are widely used globally.

Acknowledgements

This study was partially supported by Nesta through project SCI-PHI, Segment-based Collective Intelligence for Population Health Improvement. Nesta's collective intelligence grants programme is supporting experiments that combine human and machine intelligence to solve social problems. The £500,000 fund is co-funded by Nesta, Wellcome Trust, Cloudera Foundation and Omidyar Network.

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