

Identification of Meaningful Aspects of Physical Activity: Concept Elicitation by AI-Assisted Coding of Online Patient Conversations

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INTRODUCTION

Wearable activity monitors (AMs) may enable measurement of physical activity (PA) in clinical trials, however little work has currently been done to identify aspects of PA most meaningful to patients to aid definition of pertinent AM-derived outcome measures.

We explored the use of unsolicited data from online health boards (OHBs) to provide insights that may aid AM-derived outcome measure development in **COPD**, **CHF** and **fibromyalgia**.

METHODS

A combination of artificial intelligence and natural language processing was used to provide a highly targeted approach to identification of relevant posts from eight English language OHBs. Post content was labelled and summarised, and paraphrased quotes used to summarise findings.

RESULTS

383 posts (from 271 individuals) were identified for CHF; with 425 posts (315 individuals) and 304 posts (244 individuals) for COPD and fibromyalgia respectively.

CHF: 131 individuals (48%) with CHF reported difficulty with PA (e.g., *"I can't walk 50 yards without needing to stop to catch my breath and recover"*). A further 51 (19%) with CHF reported difficulty sleeping (*"Most nights I feel like I'm drowning or can't breathe"*), and 43 (16%) difficulty doing household chores (*"Taking the trash out or vacuuming leave me short of breath"*).

COPD: 106 individuals (34%) with COPD reported difficulty with PA (*"I am supposed to exercise on a treadmill, but can't walk across the room"*). A further 56 (18%) with COPD reported difficulty doing household chores (*"I can't cut the grass, wash the car or vacuum"*), and 39 (12%) with aspects of self-care.

Fibromyalgia: 98 individuals (40%) with fibromyalgia reported difficulty sleeping; 94 (39%) identified difficulty with PA; and 68 (28%) identified difficulty with productivity (e.g., work, hobbies).

CONCLUSIONS

AI-assisted analysis of online patient conversations is an effective way to capture patient-reported impacts of disease and may contribute to concept elicitation knowledge important in the development of outcome measures.

Figure 1. Frequency of individuals posting by activity-related topic

