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COUGH MONITORING USING ARTIFICIAL INTELLIGENCE TO COMPLEMENT SMOKE CESSATION INTERVENTIONS: A CASE STUDY

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INTRODUCTION: Tobacco dependence is a risk factor for cardiovascular and respiratory disease. In 2018, 55.1% of smokers in the United States indicated their willingness to stop smoking, however, less than 8% succeeded in quitting. We present a case where monitoring cough frequency using an AI system contributed to lifestyle changes in a chronic smoker.

CASE PRESENTATION: We carried out a study evaluating potential uses of an AI-based cough detection system in northern Spain. Among enrolled participants there was a 71 year-old female with a history of smoking 20-40 cigarettes/day between ages 18 to 36, and from age 67 to present. Past medical history revealed chronic non-productive cough, and several episodes of upper respiratory tract infections per year. She was enrolled in November 2020, when the AI system registered a mean cough frequency of 52 coughs/day. Following a quitting attempt in January 2021, she reported improvement in respiratory symptoms, which matched a reduction in cough frequency to 12 coughs/day. This was sustained until April, when a smoking relapse increased cough frequency. Observing this contributed to her decision to stop smoking.

DISCUSSION: This participant used the cough detection system regularly for nine months. In this period, she was able to link increases in cough frequency to smoking relapses, which eventually prompted the adoption of nicotine patches and deterred tobacco use.

CONCLUSIONS: Registering cough frequency via AI systems can help smokers perceive immediate effects of tobacco use on respiratory health, contributing to changes in lifestyle and reinforcing smoking cessation efforts.

DISCLOSURE: The AI system was developed by Hyfe, inc. JB is the CEO of Hyfe, EK is an employee of Hyfe. CCh discloses consultancy fees and equity from Hyfe.

KEYWORD: smoke cessation

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