Motivation
Chronic cough is a common clinical problem that affects approximately 5% of individuals in the United States [1]; however, there are few objective measurements that assess the frequency and severity of the cough to help track progress.

Aim
(1) To gather audio data to assist in future acoustic cough detection algorithm development
(2) Assess the participants’ perceptions of using the app at home

Methods

Participants
- Five English speaking adults (4 cisgender female, 1 cisgender male, M= 59.8 years, SD = 12.4) enrolled in the study.
- Participants had a diagnosis of chronic cough for at least 8 weeks that impacted their sleep at night.

Protocol: Participants completed two study sessions.
- Session 1: demographic information was collected including medical information on their cough and sleep. Secondly, the Leicester Cough Questionnaire, a likert-scale questionnaire assessing the impact of a cough on various aspects of one’s life, was given [2]. Lastly, participants were trained how to use a recording app on their mobile device and shown how to log their sleep through a template that was provided for them.
- Session 2: data on the comfortability and usability of the app were collected. The sleep recordings were extracted directly from the participant’s phone and transferred to our secure research database.
- Between study sessions, participants recorded their sleep at home for up to five nights on their personal smartphones.

Fig. 1: Example of an acoustic cough waveform.

Results

Average comfortability/usability score:
Session 1: 4.32
Session 2: 4.96
(5-pt Likert scale)

Average of 6.7 hours of sleep, with 1.9 (range = 0–3) wakeful cough events per night
Average Leicester score of 10.7, (range = 8.1–16.9) indicating a negative impact on daily life [3]

Discussion and Future Directions
- Apps are a feasible way to provide quantitative data on chronic cough while asleep.
- A comparison between self-reported cough events and algorithmic detected coughs is needed to determine the accuracy of patient reports.
- More information is needed on how to protect privacy when using recording apps during the day.

References and Acknowledgements

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