

# The acceptability of and real time engagement with a context-aware smartphone smoking cessation app (Q Sense)

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**Conflict of interest statement: None**

### Background

- Cues to smoke from the environment are implicated in almost half of all smoking lapses (Shiffman et al, 1996)
- Q Sense is a smartphone app that delivers real time lapse prevention support when a smoker enters a location where they would usually smoke. This 'geofence-triggered support' is tailored to what the app has learnt about what cues the smoker to smoke in that location.
- Q Sense is feasible to use by smokers (Naughton et al, 2016, *JMIR mHealth uHealth*), though they underreport smoking. However, acceptability has yet to be established.

### Objectives/Methods

#### Objectives

- 1 Assess acceptability
- 2 Estimate the speed of engagement with geofence-triggered support messages
- 3 Estimate disengagement from the app

- Mixed methods design** (app data, follow-up survey & 1-to-1 interviews)
- Participants were smokers, receiving/motivated to receive cessation support (**N=42**)
  - 55% were female
  - 50% were over 35 years old
  - 74% smoked within 30 mins of waking
- Participants used app prequit (~7 days) and postquit up to 28 days
- Follow up survey at 28 days post quit date (n=30 out of 42; 71%)
- Purposive sample invited to interview (n=9), analysed using thematic analysis

### 1 Results: Acceptability

Issue	Agree	Neutral	Disagree
Use app again	76%	18%	6%
Privacy concerns	23%	35%	42%
Negative reminder*	17%	30%	53%

\* Subsample followed up who received geofence triggered support

*"When [the messages] actually came through it was as if the programme was written for me. Seriously that is what I did feel...because it was coming through at the times when I felt that I would have smoked."* (ppt 1)

*"Some of [the messages] were useful and some of them seemed very daft. Yes. Some were very irrelevant to me personally, I thought."* (ppt 21)

### Q Sense

**Geofences (virtual perimeters) are created when a smoker reports smoking on the app, in advance of their quit date.** Smoking reports include items about the presence of smoking cues for that location

**If/when the smoker enters or spends time in a geofence during their quit attempt, support messages are delivered in real time,** tailored to the likely smoking cues the smoker will be exposed to in that location

### Conclusions

- 3/4** would use Q Sense again
- Over half of geofence messages engaged with, most viewed within **5 mins**
- 1/2** of interaction episodes driven by notifications

### 2 Results: Engagement

- 2,879 interaction episodes with app (> 1 minute apart). Mean of 70 (SD 75) per participant
- Of 3,090 notifications, 1,483 (48%) engaged with (i.e. notification tapped to view message)
- Of 769 geofence notifications, 432 (56%) engaged with
- Of those geofence messages engaged with, median time to engagement with notification (n=15) = 4.5 mins. Geofence messages were viewed significantly quicker than daily morning messages (multi-level modelling analysis)

**Geofence messages:** Median = 4.5 minutes, 79% viewed within 30 minutes

**Daily support messages:** Median = 24.2 minutes, 54% viewed within 30 minutes

p < 0.001

### 3 Results: Disengagement

- Last completion of an app survey or rating a message

**Survival Function**

Approx. end of automated support (38 days)

**Median 25 days (IQR 7-41)**