



Programme: MSc Public Health and Social Care in Practice

Module: Population Health and Digital Health Promotion

Component 1: Blog

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BLOG 1: Evaluation of smoking-cessation app, NHS SmokeFree

Addressing the Public Health Issue

Smoking has been one of the most common preventable illnesses and premature deaths in the UK. The information provided by the NHS still reveals that 10% of smoking-related diseases remain high in middle-income families, and 35% in lower-income groups and communities facing health inequalities (O'Connell et al., 2022). Digital behaviour-support tools have emerged as a supplementary approach to traditional cessation programmes since they can offer sustained, inexpensive, and individualised assistance.

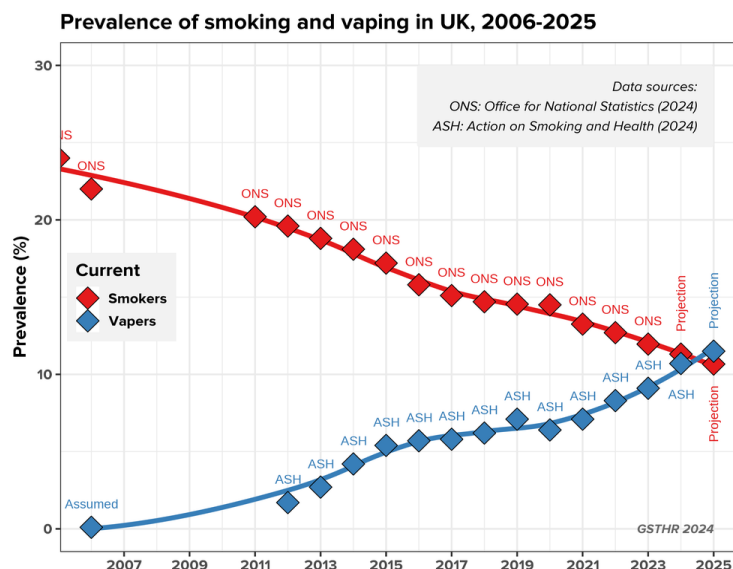


Figure 1: Portion of UK Smokers

(Source: GSTHR, 2024)

Usage of NHS SmokeFree

NHS SmokeFree is a well-organised behavioural support application featuring motivational information, goal tracking, and user-specific notifications to assist the user in staying abstinent (Turnbull, 2025). It gives progress reports on a daily basis, health-benefit schedules, getting-savings calculators, and reminders to justify commitment. The application promotes self-monitoring (a fundamental part of numerous behavioural change theories) and provides optional

assistance in the form of smoking cessation services. In its design, it tries to reduce the feeling of overwhelm when quitting and subdivides the progress into small and achievable steps.

Evidence of Effectiveness

The available reviews of digital cessation tools indicate that they have the potential to substantially aid quit attempts in combination with behavioural counselling. Research regarding NHS digital programmes suggests that apps with systematic motivational messages will enhance adherence and the probability of staying smoke-free in the four-week mark (Chipps, 2024). The design of SmokeFree is consistent with this evidence as it provides behavioural cues, positive reinforcement, and feedback on progress.

Impact, Strengths, and Shortfalls

There are a number of benefits of SmokeFree:

- NHS credibility as a national organisation.
- Availability of various socio-economic groups.
- Respectable behavioural direction and monitoring.
- It requires minimal software expertise and is user-friendly.



Figure 2: SmokeFree Interface

(Source: Cumbria, 2025)

Nonetheless, the application has weaknesses. Personalisation is restricted by its rule-based behavioural logic, as opposed to an adaptive one. The relapsed and high-risk triggers users do not receive real-time tailored interventions, but generalised advice (Abo-Tabik, Costen and Benn, 2021). The app is also not predictive, such that it can be used to determine the most vulnerable times of a user. It does not have contextual information, which could be used to intervene before a craving escalates, like location information or indicators of emotional state.

Recommendations to address shortfalls

- SmokeFree would be enhanced by incorporating machine-learning technology that would adjust according to user trends and single smoking-triggering factors (NHS Quit Smoking, 2025).
- Additional optional alerts that are alarmed by geolocation can be used to notify users that they have left safe zones, including established smoking areas.
- Improved monitoring of emotional well-being, mood-check-ins, or wearable connectivity may enable more timely intervention (Mellor et al., 2021).
- Lastly, it might be worthwhile to incorporate additional interactive features, like conversational support or short audio-guided tips, or AI micro-coaching, which would be able to get you through periods of relapse.

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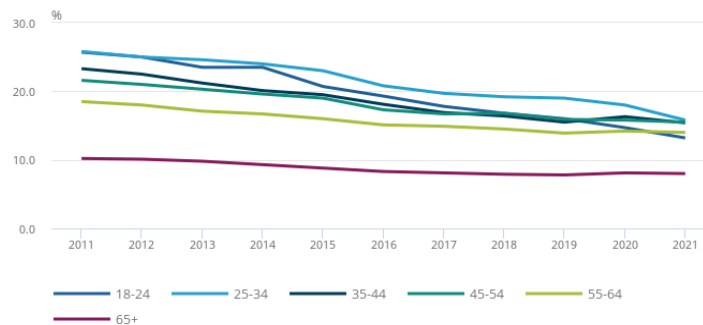
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BLOG 2: Evaluation of AI-Powered Craving-Prediction App using geolocation trigger mapping and Behavioural Trigger Detection

Public Health Issue

Figure 2: People aged 25 to 34 years continued to have the highest smoking prevalence

Proportion who were current smokers, all persons by age group, UK, 2011 to 2021



Source: Office for National Statistics – Annual Population Survey

Figure 1: UK Tobacco and Smoking Rates

(Source: ONS, 2022)

Smoking has remained a huge burden to the health systems of populations, with the most frequent hindrances to the cessation attempts being relapse. The NHS reports 14% to 15% of the UK adult population is addicted to smoking and tobacco (Rani, 2025). The triggers of cravings are usually environmental, social, emotional, or daily habits. Traditionally, the digital cessation tools are designed to assist at the point of triggers. A craving-prediction system based on AI seeks to change this model and foresee high-risk situations and eliminate them before they happen.

Designed Technology: AI-Powered Craving-Prediction App

The app operates on the basis of artificial intelligence and tries to identify the vulnerability patterns based on geolocation data, time-based clues, daily routine, and emotional conditions that are reported by users. It anticipates the timing of cravings and indicators that can trigger them, customised recommendations, or relaxing micro-interventions. The app does not wait for the user to struggle but rather is a predictive app, knowing the risk is at hand, and therefore intervenes early

before the user is subjected to situations where the cravings are likely to take place, in a real-world setting.

Usage in Digital Health Promotion

Personalised interventions are becoming more important in digital health promotion. An AI application is compatible with the latest behavioural-health initiatives as it offers customised assistance based on data (Hsu et al., 2025). It can identify:

- Places mostly linked with smoking.
- The periods of the day when the cravings are high.
- Routines or stress precipitants.
- High-risk social contexts.

Through the analysis of such patterns, the app provides short, practical messages or other coping interventions at the right time. It is predictive, which increases user freedom and promotes long-term behavioural resilience.

Expected Impact, Benefits, and Limitations

AI design may be of great help in reducing the relapse by preventing the cravings before they escalate. The advantages are enhanced personalisation, behavioural reinforcement in real time, and closer adherence to models of behaviour-change like the COM-B model (Saura et al., 2022). It can also help people who do not have access to face-to-face cessation services, thus covering one of the main aspects of digital health disparity.

However, limitations would exist at the same time. The use of geolocation data and behavioural data is dangerous in regards to privacy and ethics (Loughnane et al., 2025). There can be alert fatigue when the interventions are too frequent. The necessary data input is needed to work properly, and thus predictions made in the initial stages can be not as accurate.

Addressing Shortfalls

- The shortfalls may be resolved through offering adjustable sensitivity options, clear explanations of data usage, strong security measures, and user specified preferences to the frequency of alerts.
- The hybrid models that integrate predictive AI and evidence-based counselling or virtual coaching may be more effective (Rani, 2025).
- The feature of offline and low-data would also avoid digital exclusion.

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